

Consumer Markets for Pesticides and Fertilizers:

U.S. Market Analysis and Opportunities

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Consumer Markets for Pesticides and Fertilizers: U.S. Market Analysis and Opportunities

*This report and the survey on which it is based are the work effort
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© CONSUMER MARKETS FOR PESTICIDES AND FERTILIZERS: U.S. MARKET ANALYSIS AND OPPORTUNITIES

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FOREWORD

Consumer Markets for Pesticides and Fertilizers: U.S. Market Analysis and Opportunities is the eighteenth edition of Kline's comprehensive survey of this industry. This service provides biennial business information on this highly competitive and changing industry. It presents data on the U.S. consumer market for pesticides, fertilizers, and related products in two volumes. *Section One: Business Analysis* provides information on market size, brand shares, advertising expenditures, distribution patterns, and forecasts for each of 11 product categories and profiles of roughly 40 major suppliers and leading distributors in the industry.

Section Two: Consumer/Retailer Profiles presents data on the buying and selling practices for 11 product categories based on 1,498 consumer interviews. It includes tabulated results of all responses to these structured surveys.

Your comments and suggestions for further improvements are welcomed and encouraged. As a convenience, we have provided a comment sheet in Appendix 7 that we hope you will return to us so that we may incorporate any improvements you might suggest into future editions. We also invite all subscribers to notify us of any errors so that we may correct them in future editions of this survey. If we may be of any assistance in using this document or provide further insights into our methodology or findings, our staff would be pleased to help.

For more focused analyses, Kline & Company can also provide assistance through our custom, strategic consulting capabilities. Having served the agribusiness and related industries since the 1960s, Kline has undertaken numerous consulting assignments that have involved growth forecasts, competitive intelligence, market and brand analyses, and consumer products market research. In addition to these analyses, Kline has completed various other engagements for our industry-leading clients, including:

- Acquisition screening and assessments
- New business development
- Industry/category/brand assessments
- Competitive intelligence
- Strategic analyses

We invite all subscribers to notify us of any errors so that we may correct them in future editions of this study.

In closing, we wish to acknowledge the efforts of the many Kline team members for their work in completing this report.

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1. INTRODUCTION

This report analyzes the U.S. market for consumer pesticides and fertilizers in 2016. The study presents information on products and companies in two sections. Section One is organized into three major subsections. The first provides an industry overview, summarizing the main features and trends of the consumer market for pesticides, fertilizers, and related products. The second presents market information for 11 product categories, grouped into five chapters. The third profiles principal suppliers and distributors.

Section Two presents data compiled from mail surveys of consumers, grouped into six major subsections. The first provides a brief summary of major findings and a guide to the organization of the rest of the volume. The second through sixth sections present survey data concerning lawn maintenance practices, fertilizers, herbicides, insecticides, and other pesticides.

SCOPE

This report covers pesticides and fertilizers used on lawns, gardens, and houseplants and in households by consumers. Insect repellents are included with insecticides.

The study places primary emphasis on products sold through domestic retail outlets. Data are given in net marketers' dollars, defined as the price received by the marketer less any marketing expenses, before distributor and retail markups. Any company that sells a branded product is considered a marketer even if it has no manufacturing facilities of its own. Manufacturers that do not market to consumers, but make products only under private label are excluded from this survey for purposes of market share determination, although some are profiled with other consumer suppliers.

Products specifically formulated and promoted for sale to and application by agricultural or professional end users are also excluded from the report.

SOURCES AND METHODS

This study is based on data gathered through interviews with representatives of suppliers, distributors, trade associations and trade journals, and structured surveys of consumers and retailers conducted from January 2017 through May 2017. The interviews were supplemented with information obtained from supplier literature, annual reports, advertisements, and other promotional materials.

ACCURACY

The information presented in this study is believed to be sufficiently accurate for preliminary planning needs. However, more detailed studies of individual products or companies should be conducted before substantial financial commitments are made.

Market sizes and brand shares were determined by analyses of sales and other data obtained through interviews. The accuracy of the information varies with the cooperation of the respondents and their knowledge of different product categories. In general, the larger the market is, the more accurate the information will be. Data on market size are believed to be within 10% of true value for product categories with sales of \$50 million or more, and within 25% of true value for smaller product categories. The accuracy of data on brand share varies accordingly.

TRADEMARKS

Many products are referred to by their trademarked names in this study; the name is written in title capitals, and the owner of the trademark is usually identified in the accompanying text or table.

ROUNDING

Percentages in some tables may not total 100% due to rounding.

APPENDICES

A list of marketers ranked by their domestic sales of branded consumer pesticides and fertilizers is provided in Appendix 1.

Regional categories used to present data are defined in Appendix 2. Appendix 3 consists of a table summarizing sales by supplier, fertilizer, and pesticide category.

Kline & Company welcomes opinions and suggestions concerning this study from clients. A comment sheet is provided for this purpose in Appendix 4.

2. INDUSTRY OVERVIEW

MARKET DESCRIPTION

Suppliers of consumer pesticides and fertilizers can be classified into four broad categories:

- Basic manufacturers of raw materials for fertilizers and active ingredients for pesticides that also formulate and market finished products under their own brand names. For example, Scotts falls within this group.
- Formulators that purchase raw materials, process and package them, and market the finished products. This category encompasses a majority of pesticide and fertilizer suppliers, such as Hartz Mountain, S.C. Johnson, Lebanon Seaboard, and Spectrum Brands.
- Reformulators that buy processed material or formulated products that they package and sell.
- Companies owning neither manufacturing nor packaging facilities that buy finished products from other suppliers for sale under their own trademarks. Retailers with private-label brands make up the bulk of this category.

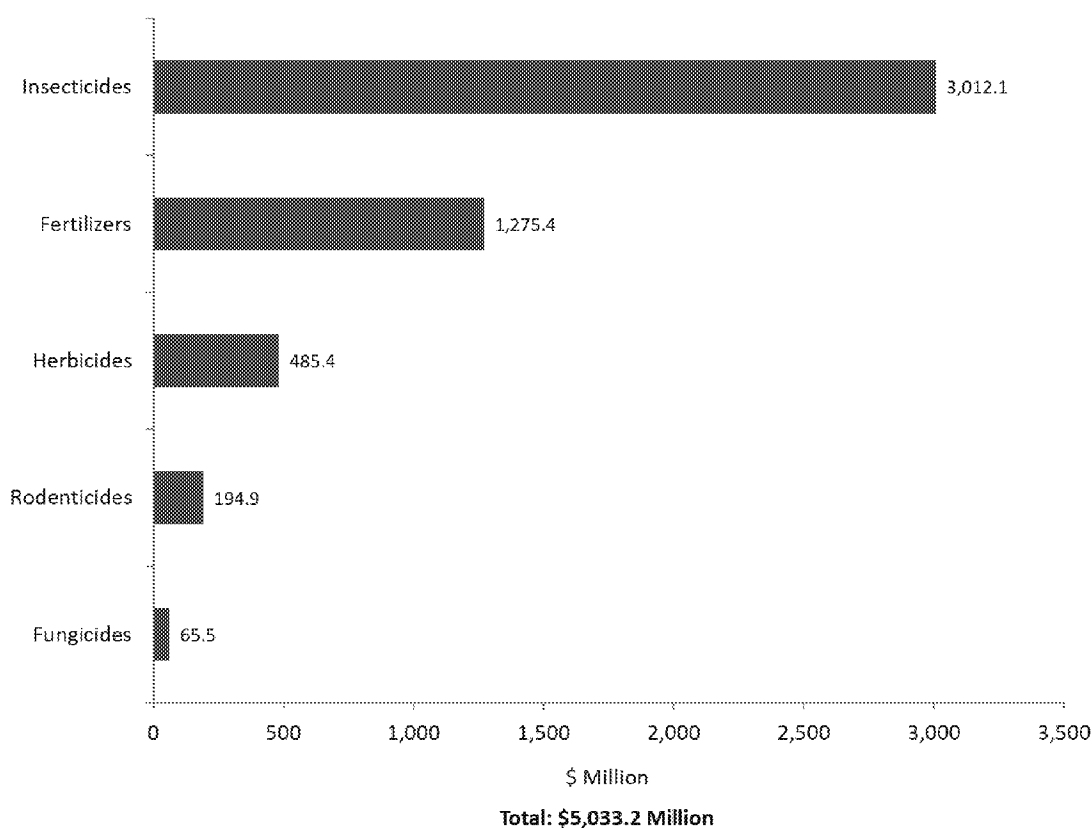
There is considerable overlap among these classifications, particularly for companies with broad product lines. It is, for example, common practice to subcontract production of aerosols to manufacturers that specialize in this product form. Scotts makes most of its consumer fertilizers in-house, but uses other firms to manufacture Miracle-Gro fertilizers.

SALES OVERVIEW

Sales by product category

Total U.S. sales of products covered by this study are estimated at \$5,033.2 million in 2016 compared with \$4,539.8 million in 2011. Total sales of branded consumer products have increased a net 10.9%, or an average annual increase of 2.2%, representing growth across all segments. This overall growth reflects the rebound in the economy over the past five years.

Insecticides account for approximately 62% of sales for 2016, and pesticides collectively constitute close to 75%. Fertilizers represent about 25% of the total in 2016.

Figure 2-1: Estimated U.S. Sales of Consumer Pesticides and Fertilizers, 2016

Product category sales changed at significantly different rates during the period as a result of the influence of specific weather conditions, new product introductions, increasing concerns over the West Nile virus, significant fertilizer price increases, and various other factors.

Sales by region

Among the regions, the South accounts for the largest percentage of sales of pesticides and fertilizers in 2016, followed by the North Central.

Table 2-1: Sales of U.S. Consumer Pesticides and Fertilizers by Region, 2016

Region	\$ Million	% Of total
South	1,985.5	39.4
North Central	1,252.5	24.9
Northeast	957.5	19.0
West	837.7	16.6
Total	5,033.2	100.0

Table 2-2: Estimated U.S. Sales of Consumer Pesticides and Fertilizers by Product Category, 2016

Product category	\$ Million	% Of total
INSECTICIDES-a		
Pet	1,473.4	29.3
Outdoor	623.2	12.4
Household	504.7	10.0
Insect repellents	410.8	8.2
Total	3,102.1	61.6
FERTILIZERS-b		
Lawn	873.9	17.4
Garden	334.1	6.6
Houseplant	67.4	1.3
Total	1,275.4	25.3
HERBICIDES		
Garden and nonselective	317.2	6.3
Lawn	168.1	3.3
Total	485.3	9.6
RODENTICIDES	194.9	3.8
FUNGICIDES	65.5	1.2
TOTAL	5,033.2	100.0
a- Includes insecticide-herbicide and insecticide-fungicide combination products.		
b- Includes fertilizer-pesticide combination products.		

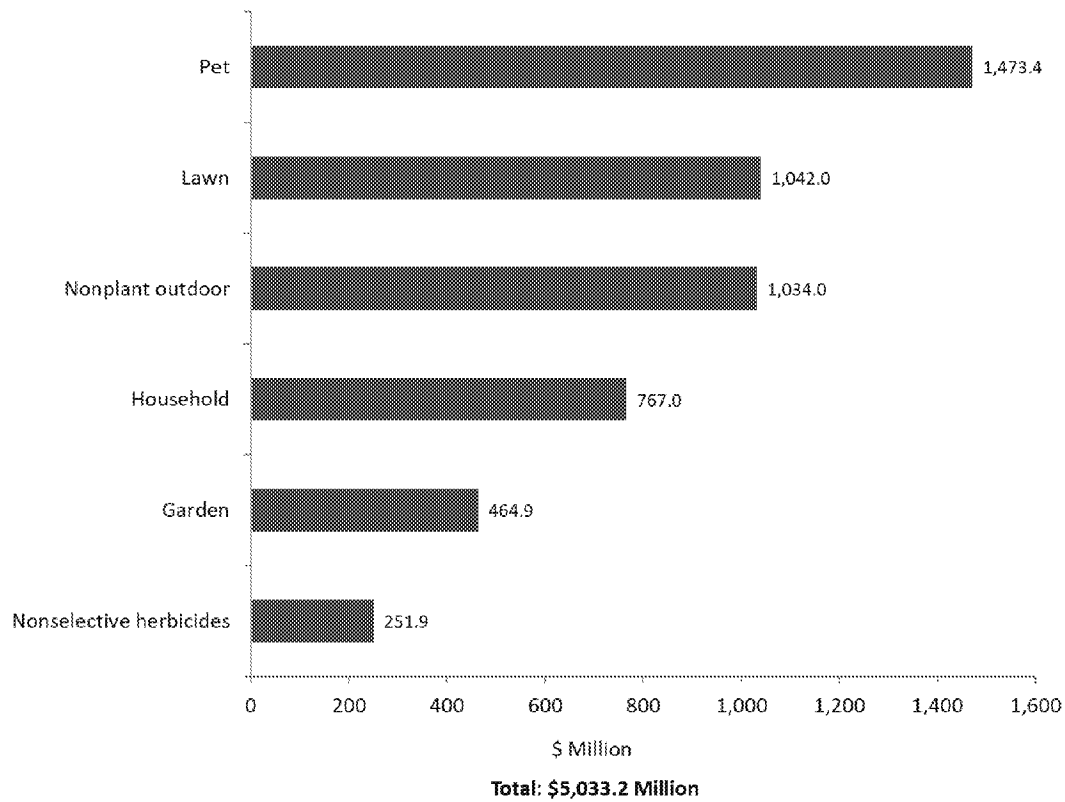
Sales by application

Consumer pesticides, fertilizers, and related products can be categorized into seven major groups based on their type of use. Pet insecticides and nonselective herbicides are broken out separately because both of these product categories cut across or fall outside of other application groups. Pet insecticides include some products for use in the home and yard, as well as on animals. Nonselective herbicides are used in gardens, on lawns, and as edging and maintenance products on and around pavement and fences.

Lawn products, pet insecticides, and household products are the largest categories, together accounting for approximately 65% of total sales in 2016. Garden products rank fourth.

Table 2-3: Estimated U.S. Sales of Consumer Pesticides and Fertilizers by Product Category, 2011 to 2016

	\$ Million		
Product	2011	2016	Growth, %
INSECTICIDES-a			
Pet	1,217.5	1,473.4	21.0
Outdoor	582.4	623.2	7.0
Household	494.4	504.7	2.1
Insect repellents	347.9	410.8	18.1
Total	2,642.2	3,102.1	17.4
FERTILIZERS-b			
Lawn	829.1	873.9	5.4
Garden	321.7	334.1	3.8
Houseplant	62.8	67.4	7.3
Total	1,213.6	1,275.4	5.1
HERBICIDES			
Garden and nonselective	292.3	317.2	8.5
Lawn	160.6	168.1	4.7
Total	452.9	485.3	7.1
RODENTICIDES	174.7	194.9	11.6
FUNGICIDES	56.5	65.5	15.9
TOTAL	4,539.9	5,033.2	10.9
a- Includes insecticide-herbicide and insecticide-fungicide combination products.			
b- Includes fertilizer-pesticide combination products.			

Figure 2-2: Estimated U.S. Sales of Consumer Pesticides and Fertilizers by Application, 2016

Active ingredients

Total consumption of active ingredients in pesticides and fertilizer-pesticide combination products is estimated at 43.4 million lb in 2016. Herbicides account for the majority of this consumption, in part because fertilizer-herbicide products are far more widely used than fertilizer-insecticide or fertilizer-fungicide products.

Private-label activity

The market share of retailer private-label products is steady to lower over the past several years because: (1) these products offer much less of a price advantage to consumers than they once did; and (2) several large retail chains have eliminated or reduced their use of private-label goods. In addition, due to the highly competitive market, suppliers have had to lower prices through rebate programs and the absorption of inflation-based increases.

With the exception of Kmart, Walmart, and Ace Hardware, concerns about pesticides and related liability risks have also reduced retail chain interest in providing these products under their own labels. However, in the lawn fertilizer category, retailer interest in private-label products remains high because mass-merchandise stores, lawn and garden centers, and home improvement centers continue to attract the majority of consumers. Retailers are providing these products to compete against the national brands as a somewhat easy method to increase profit margins.

Table 2-4: Estimated U.S. Sales of Consumer Pesticides and Fertilizers by Application, 2016

Application	\$ Million	% Of total
LAWN		
Fertilizers	873.9	17.4
Insecticides	207.7	4.1
Herbicides	168.1	3.3
Fungicides	32.7	0.6
Total	1,282.4	25.5
PET INSECTICIDES	1,473.4	29.3
HOUSEHOLD		
Insecticides	504.7	10.0
Rodenticides-a	194.9	3.8
Houseplant fertilizers	67.4	1.3
Total	767.0	15.1
GARDEN		
Fertilizers	334.1	6.6
Insecticides	207.7	4.1
Herbicides	65.3	1.3
Fungicides	32.8	0.6
Total	639.9	12.7
NONPLANT OUTDOOR		
Insecticides	207.7	4.1
Insect repellents	410.8	8.2
Total	618.5	12.3
NONSELECTIVE HERBICIDES	251.9	5.0
TOTAL	5,033.2	100.0

a- Includes some outdoor applications.

Table 2-5: Estimated U.S. Consumption of Toxicants in Branded Consumer Pesticides and Fertilizers by Major Product Category, 2016

Active ingredient	Thousand lb	% Of category	% Of total
HERBICIDES			
2,4-D	7,909	32.7	21.3
Glyphosate	5,024	20.8	13.5
MCPP	3,189	13.2	8.6
Pendimethalin	2,692	11.1	7.2
MCPA	1,245	5.1	3.3
Trifluralin	985	4.1	2.6
Dicamba	913	3.8	2.5
Pelargonic acid	680	2.8	1.8
Atrazine	300	1.2	0.8
Quinclorac	223	0.9	0.6
Fenoxaprop	185	0.8	0.5
Diquat	106	0.4	0.3
All other-a	740	3.1	2.0
Total	24,191	100.0	65.0
INSECTICIDES-c			
Bifenthrin	2,016	22.0	5.4
Carbaryl	1,258	13.7	3.4
Other residual toxicants	1,203	13.1	3.2
Other pyrethroids	737	8.0	2.0
Acephate	712	7.8	1.9
Boric acid	511	5.6	1.4
Dylox	509	5.5	1.4
Malathion	397	4.3	1.1
Imidacloprid	36	0.4	0.1
All other-a	1,801	19.6	4.8
Total	9,180	100.0	24.7
FUNGICIDES			
Neem oil	1,367	36.3	3.7
Chlorothalonil	1,125	29.8	3.0
Thiophanate-methyl	536	14.2	1.4
Copper	108	2.9	0.3
Bacillus Subtilis	70	1.9	0.2
Myclobutanil	36	1.0	0.1
Propiconazole	28	0.7	0.1
All other-a	499	13.2	1.3
Total	3,769	100.0	10.1

(Continued)

Table 2-5: Estimated U.S. Consumption of Toxicants in Branded Consumer Pesticides and Fertilizers by Major Product Category, 2016

Active ingredient	Thousand lb	% Of category	% Of total
RODENTICIDES			
Zinc phosphide	43	63.2	0.1
Potassium nitrate	10	14.7	c
Sulphur	10	14.7	c
Diphacinone	1	1.5	c
Bromethalin	1	1.5	c
All other-d	3	4.4	c
Total	68	100.0	0.2
TOTAL	37,208		100.0-b
a- Includes a large variety of other active ingredients used in small amounts.			
b- Does not include approximately 7.6 million lb of DEET and 5.8 million lb of other insect repellent ingredients, which are repellents rather than true pesticides.			
c- Minor.			
d- Includes zinc phosphide and others.			

COMPETITION

The consumer market for pesticides and fertilizers is temptingly large in appearance and seems to present few barriers to entry in comparison with the agricultural and professional markets. In the past few years, it has proven particularly attractive to basic manufacturers of pesticides and to agricultural cooperatives, both of which are casting about for supplementary revenue as their core businesses have come under pressure. Monsanto and Dow AgroSciences are highly successful examples of basic producers that developed a proprietary active ingredient for consumer use. Their experience has encouraged other large chemical companies to look for opportunities of the same kind.

However, the appeal of the consumer market is rather deceptive. It is well populated by existing suppliers, and the leading marketers are formidable. The 12 largest suppliers of consumer pesticides and fertilizers represent only a small percent of the companies active in the industry, but they accounted for approximately 83% of total sales in 2016, down slightly from 2011. The top three alone account for over one-half of total sales. In most product categories, the dominant company holds from one-quarter to two-thirds of the market; and there is a strong second tier of regional suppliers. The level of competition is generally high and profit margins are comparatively thin because of this. Margins are also slim because the costs of distribution and marketing are high.

The leading company in the consumer market for pesticides and fertilizers is Scotts, with sales of roughly \$1,530 million, or 30.4% of the total. Merial is the second-leading company, with a 10.9% share of market, followed by Spectrum Brands with a 9.2% share and S.C. Johnson with an 8.4% share. Bayer, Central Garden & Pet, and Hartz Mountain are next on the list of leading companies, largely due to the strength of their flea and tick control products in the pet insecticides category.

Product differentiation is also difficult in the consumer market. Active ingredients and formulations have rarely been proprietary, but this situation is changing as basic producers with new molecules are putting the consumer market on a faster track than it had been on historically. Many products, like 2,4-D, are off patent and available to any formulator; and others have been licensed by the basic manufacturer to multiple suppliers in the consumer market. As a result, rather than focus on the products themselves, sellers of these products have come to focus more and more on:

- Brand recognition and image
- Delivery systems, such as hose-end applicators and shaker canisters
- Distribution and retail placement

Figure 2-3: Estimated U.S. Sales of Branded Consumer Pesticides and Fertilizers by Major Marketer, 2016

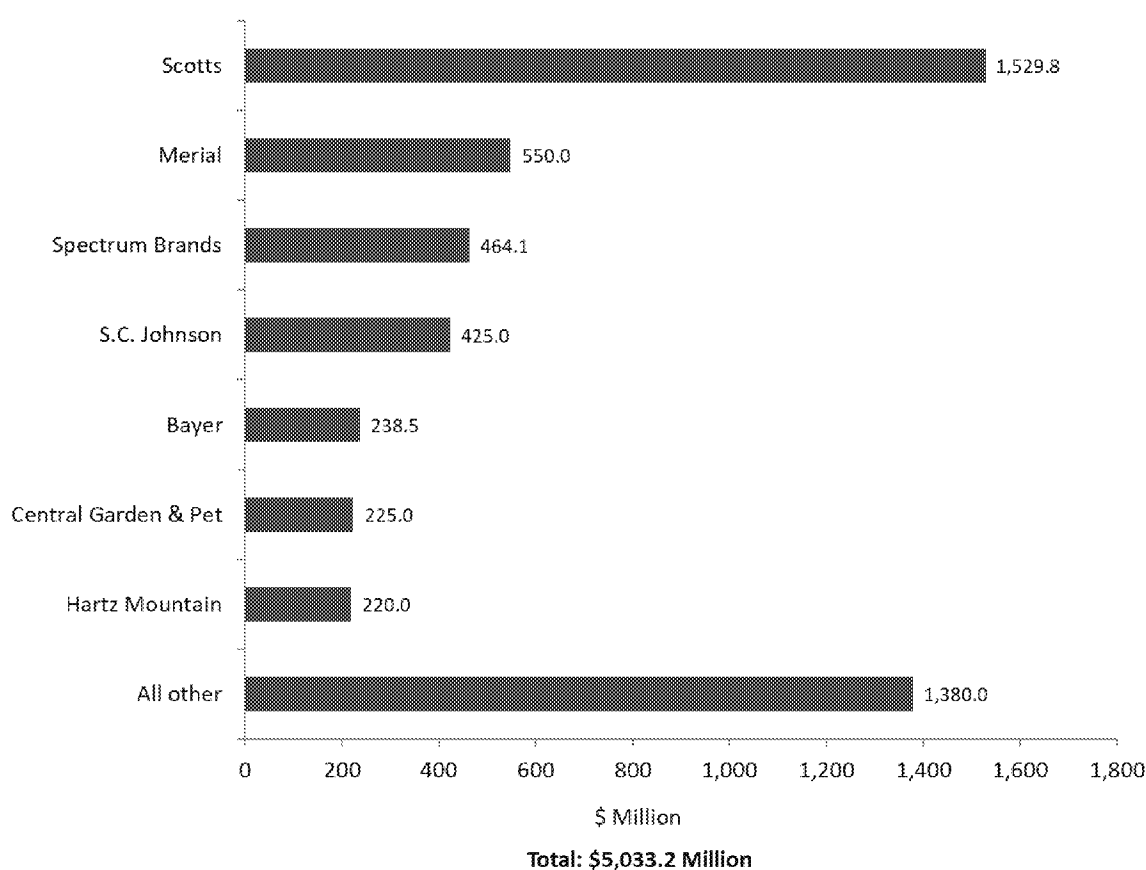


Table 2-6: Estimated U.S. Sales of Branded Consumer Pesticides and Fertilizers by Major Marketer, 2016

Company	\$ Million	% Of total
Scotts	1,529.8	30.4
Merial	550.0	10.9
Spectrum Brands	464.1	9.2
S.C. Johnson	425.0	8.4
Bayer	238.5	4.7
Central Garden & Pet	225.0	4.5
Hartz Mountain	220.0	4.4
Perrigo	122.5	2.4
Reckitt Benckiser	120.0	2.4
Woodstream	112.5	2.2
Lebanon Seaboard	90.2	1.8
Virbac	98.7	2.0
Zoetis	98.5	2.0
SBM	72.2	1.4
Avon	68.0	1.4
Voluntary Purchasing Group	50.9	1.0
The Andersons	43.2	0.9
All other-a	504.1	10.0
Total	5,033.2	100.0
a- Includes PBI/Gordon, The Jobe's Company, Lamplight Farms, Bonide, and Dial, among others.		

Distribution has become an even greater hurdle for new entrants. Retail chains have been critical to success in the consumer market for some time because they control supplier access to end users. In the last several years, the market share controlled by mass merchandisers and home improvement centers has been growing steadily; and, at the same time, a number of major chains have begun to cut back on the number of brands of pesticides and fertilizers that they carry. These trends favor existing, larger suppliers and make it difficult for new entrants to gain a foothold.

These factors are contributing to the continuing trend of using acquisitions to enter the market or to increase market share, and joint ventures or partnerships to increase product line depth or market reach. Examples of past acquisitions include Scotts' purchase of Green Light, as well as Central Garden & Pet's purchase of Zoecon, Pennington Seed, Lilly Miller brands, Farman, and Gulfstream Home and Garden.

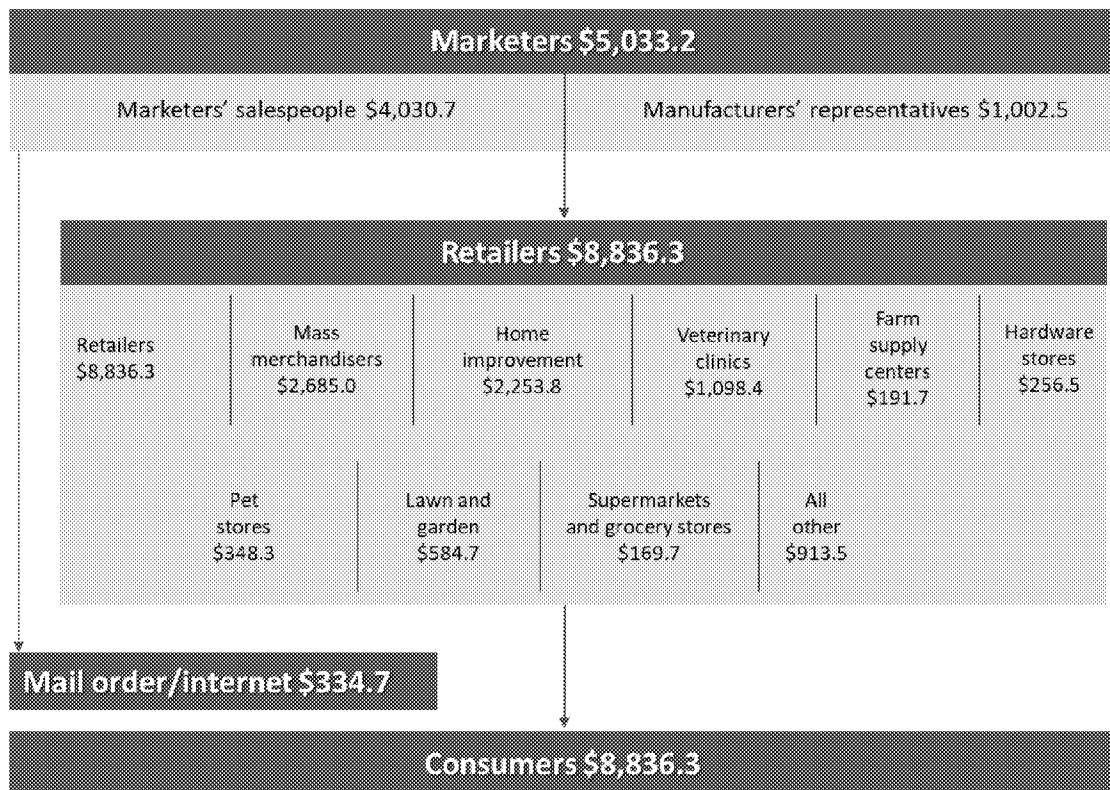
DISTRIBUTION

Marketers' own sales representatives account for approximately 80% of total sales, and manufacturers' representatives account for the remaining 20%. Approximately 75% of sales are made directly to retail accounts, 21% to distributors and brokers, and 4% through internet and mail-order catalogs.

Retail outlets, such as Target, Walmart, Home Depot, and others, demand to deal directly with manufacturers of consumer pesticides and fertilizers. This demand is not unreasonable, however, based on the volume these retailers represent to manufacturers. The growing penetration of the retail market these outlets represent has moved some manufacturers, such as Scotts and Spectrum Brands, to deal one-on-one with the retailers either through the establishment of direct sales forces or a more concentrated effort in selling direct versus selling through distributors.

Figure 2-4: Estimated Distribution of Pesticides and Fertilizers, 2016

Millions of marketers' dollars



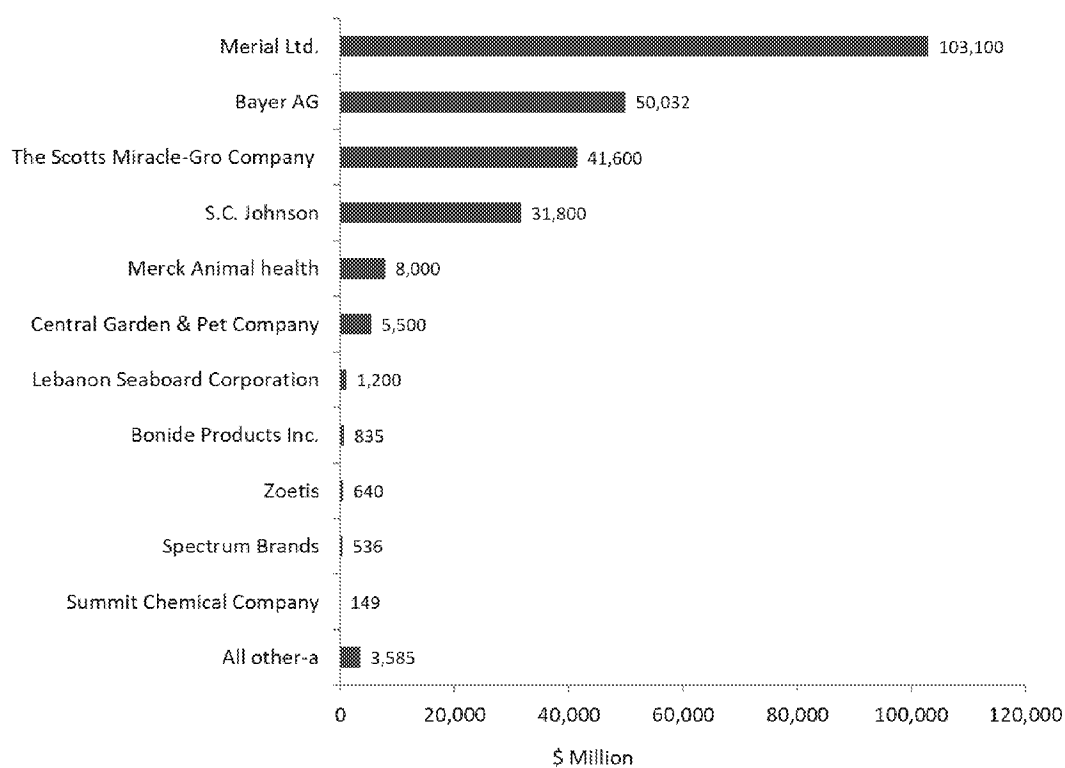
Mass merchandise stores have passed home improvement stores as the leading retail outlet for these products, accounting for over 30% of sales in 2016, while home improvement stores now account for 25.5%. Veterinarians, with their sale of flea and tick medications, rank third with 12.4%, followed by lawn and garden centers with 6.6% of the total.

Table 2-7: Estimated U.S. Distribution of Consumer Pesticides and Fertilizers, 2016

Retail outlet	\$ Million	% Of total
Mass merchandise stores	2,685.0	30.4
Home improvement centers	2,253.8	25.5
Veterinarians	1,098.4	12.4
Lawn and garden centers	584.7	6.6
Pet superstores	348.3	3.9
Internet/mail order	334.7	3.8
Farm supply stores	191.7	2.2
Hardware stores	256.5	2.9
Supermarkets and grocery stores	169.7	1.9
All other	913.5	10.3
Total	8,836.3	100.0

ADVERTISING

Traceable media expenditures (TME) for consumer pesticides, fertilizers, and related products are approximately \$247 million for 2016. The top four marketers account for almost 92% of this total.

Figure 2-5: U.S. TME for Branded Consumer Pesticides and Fertilizers by Leading Marketer, 2016

a- Includes Espoma, Hartz, The Jobe's Company, Voluntary Purchasing Group, and others.

Table 2-8: U.S. TME for Branded Consumer Pesticides and Fertilizers by Leading Marketer, 2016

Company	\$ Thousand	% Of total
Merial Ltd.	103,100	41.7
Bayer AG	50,032	20.3
The Scotts Miracle-Gro Company	41,600	16.8
S.C. Johnson	31,800	12.9
Merck Animal health	8,000	3.2
Central Garden & Pet Company	5,500	2.2
Lebanon Seaboard Corporation	1,200	0.5
Bonide Products Inc.	835	0.3
Zoetis	640	0.3
Spectrum Brands	536	0.2
Summit Chemical Company	149	0.1
All other-a	3,585	1.5
Total	246,977	100.0-b

a- Includes Espoma, Hartz, The Jobe's Company, Voluntary Purchasing Group, and others.

b- Does not add due to rounding.

Merial, the leading advertiser, accounts for nearly 42% of advertising expenditures in 2016. This information is summarized from data provided by KANTAR Media, in addition to information gathered in Kline & Company interviews. KANTAR Media information is a standard industry source for consumer products of all kinds and is provided as a guide to comparative level of activity rather than as an exact measure of total advertising and promotional spending by marketers.

TME represents the cost to marketers of purchasing media time and space. It does not include the costs involved in the actual production of advertisements, which can frequently be twice those for media. It should also be noted that the KANTAR data focuses primarily on larger advertisers and is not comprehensive in its coverage. Some expenditures for direct advertising to consumers, particularly those for local media, therefore go unreported.

GOVERNMENT REGULATIONS

All segments of the pesticide industry are focused on the Food Quality Protection Act (FQPA). This legislation was passed in 1996 to repeal the outdated Delaney Clause and to make regulatory decisions based on the risk of pesticides from all possible routes of exposure, including dietary, drinking water, and nondietary sources, such as dermal exposure from residential uses. The FQPA also takes into consideration the possible differences in effects to infants and children by using additional safety factors above the conservative safety factors that had been used prior to the law. Finally, the law requires the U.S. Environmental Protection Agency (EPA) to take into consideration aggregate risk from multiple uses of the same product and cumulative risk from multiple chemicals with a similar mode of toxicity.

OUTLOOK

Gardening has long been a favorite leisure time activity of the age 45 to 65 group of home-owning consumers. Demographic trends in the United States favor gardening-related products for the next 10 to 20 years as the “baby boomer” generation continues to pursue yard and garden leisure-time activities.

Opportunities for significant individual growth in sales are greatest for marketers that can either: (1) identify new consumer applications for existing products; or (2) commercialize new active ingredients in consumer markets (Ex. *Bacillus subtilis*). Basic manufacturers with a portfolio of proprietary active ingredients and a productive discovery program to draw on are in the best position to do this. For example, the commercialization of several new active ingredients as pet insecticides has revolutionized the flea and tick market and driven significant growth.

Changes in distribution tend to offer larger marketers a means of increasing sales. Control of distribution has become a critical element in supplier success. Retail chains, which make centralized purchasing decisions, are important not only in mass-merchandise outlets and home improvement centers, but also in some lawn and garden centers and hardware stores. Placement in mass merchandise outlets and home improvement centers is particularly important because consumers have shifted a major percentage of their purchases to these stores, even in rural areas. Smaller or regional marketers tend to be at a disadvantage with regard to this trend.

Convenience is a top priority for consumers. Convenience in retail location, breadth of product offering, and product use all contribute to market share. Consumers surveyed for this study consistently cite ease of application and convenient packaging as important influences on product selection. Suppliers have applied this concept by providing more consumer-friendly packaging, redesigned to provide bolder, crisper graphics with more informative labeling. Those who market ready-to-use (RTU) products of all kinds can attest to the importance consumers place on convenience, a premium for which many are willing to pay. The introduction of battery powered RTU sprayers have become very popular over the past few years, replacing much of the pump spray sales. Pesticides in pre-measured packages are also seen as convenient and safe, eliminating exposure to the pesticide and measuring errors, and solving the problem of container disposal.

Marketers of products that address serious health or safety hazards, such as Lyme disease, the West Nile virus, and fire ants, have seen growth in these segments.

Organic and biological products have grown in market share among suppliers. As more environmentally safe alternative products become available, consumer purchase behavior has increasingly coincided with publicly expressed “pro-environment” consumer attitudes. Product safety to children and pets is an important factor in many consumer purchase decisions. As suppliers have begun to provide products of comparable price and efficacy to conventional pesticides and fertilizers, and provide the consumer with the informational support needed to understand the benefits of these products. As a result, sales of these products are growing rapidly.

KLINE'S FUTUREVIEW SCENARIO FORECAST MODEL FOR THE U.S. CONSUMER PESTICIDES AND FERTILIZERS MARKET

METHODOLOGY

Kline's approach to projecting future growth of the U.S. consumer pesticide and fertilizer market was threefold:

- Aggregated market segments into two major categories:
 - All outdoor products
 - Lawn and garden fertilizers
 - Herbicides
 - Outdoor insecticides
 - Insect repellents
 - Fungicides
 - All household and pet products
 - Household insecticides
 - Houseplant fertilizers
 - Pet insecticides
 - Rodenticides
- Examined economic indicators that might have predicted the past growth of the two major categories—outdoor products and household/pet products—and applied a statistical trend analysis to the historical market data.
- Examined statistical trend forecast growth rates on a segment-by-segment basis, looking at five different growth periods to determine whether historical growth rates can be applied to the next t-year period, and if so, how should they be applied?
- In prior reports, we have determined that U.S. disposable personal income and U.S. housing starts are predictors of the growth of these categories.
 - Disposable income has a predictor score of 0.97 out of a possible 1.00 for predicting total outdoor products spending.¹
 - Housing start data has a predictor score of 0.82 out of 1.00 for predicting household and pet product segment spending.²

¹ The predictor score is essentially the R square of the model. Other vital metrics are a T value of 15.82 and an F value of 250.28 that are both statistically significant.

² Other vital metrics are a T value of 5.26 and an F value of 27.66 that are both statistically significant.

Economists are generally predicting that growth in disposable income will slowly begin to rebound versus the last two years and continue on a slow pace until 2014, mainly due to a slow jobs recovery.

Housing starts, our other predictor, are forecast to be at a low level through 2013, and begin to rebound in 2013, with double-digit growth late in the forecast period.

ECONOMIC INDICATORS

The U.S. economy has clearly been in a period of decline followed by flattening since 2008. Kline's research, as well as general economic indicators, suggest that the current rather flat economy will begin the rebound in the 2013 to 2016 period, years three, four, and five of this forecast period.

As a cautionary note, this pattern of a two-year flat period and a three-year growth period is exactly the same as the expert forecasters were predicting at the time our 2010 report was published. So while we are basing our likely case forecast on this set of assumptions, our downside case reflects continuing the pattern that actually occurred over the past four years.

The current data published by the U.S. Congressional Budget Office (CBO) reflects this forecast, which shows sharp growth in the 2013 to 2016 period.

Table 2-9: U.S. Growth Rates and Unemployment Percentages by Period for Selected Economic Indicators, 2010 to 2016

	% Projected annual growth in each period		
	2010-2011	2012-2013	2013-2016
Wages growth	3.8	4.2	5.2
Real GDP growth	2.7	3.1	3.4
GDP price index growth	0.9	1.4	1.8
Projected unemployment %	9.5	8.0	5.9
SOURCE: Congressional Budget Office Report, United States Congress.			

Early in the recession, Kline surveyed 1,000 suburban homeowners to determine how they had reacted to the recession up to that point, and how they would determine when the recession had ended. In general, housing-related and job-related indicators, both national and the respondent's own experience, would drive their confidence level in the economy.

Table 2-10: What Indicators Will Homeowners Use to Determine if the Recession is Over?

Indicator	%
Consumer spending increases	65
National employment data improves	62
Housing prices start to rise	54
Stock market rises to certain level	46
Growth in US GDP	41
New housing construction increases	38
Employment data my region	32
Car sales increase	30
Job feels more secure	25
My company shows growth	21
Net of all housing related	66
Net of my company related	34
Multiple responses were accepted.	

We used this data to evaluate the alternative growth scenarios in this forecast by focusing on jobs, GDP, and employment data.

ALTERNATIVE HISTORICAL GROWTH RATES BASED ON DIFFERENT PERIODS

Kline & Company has been publishing the *Consumer Markets for Pesticides and Fertilizers* report since 1982. This gives us long and consistent data set with which to project the future. We looked at many different approaches to incorporating the actual historical growth rates into the future. The range of growth rates in different periods for the total of all consumer market segments is shown from 0.8% on the low end to 4.8% on the high end.

The 20-year historical rate averaged 4.8% overall, so that is generally the most optimistic of the growth rates that we might use as indicators. On the other hand, the more recent four-year period is the lowest of the historical rates due to economy-related issues.

A more recent rapid growth period in the market is shown in the far right column, called "2001-2007 growth." It shows the highest rate for the outdoor sector and the second highest rate for the household and pet sector.

By far, the lowest growth rate is shown in the column labeled Statistical Trend 12-year. That series of data is based on a straight statistical trend line of a moving 12-year period. It is influenced significantly by the recent years in the period, which were characterized by economic challenges.

In evaluating these growth rates, we concluded that:

- The 20-year forecast basis includes data that is too old to be considered relevant
- A more recent 6-year and 4-year growth rate is more reflective of what might occur in the short term future through 2013
- Different growth rates would likely occur between the early years and later years of the forecast period
- For 2001-2007, the growth rate is likely a good representation of what a “hockey stick” style rebound as we are projecting for the 2014-2016 period would look like
- The statistical trend line reflects well the possible pessimistic case, which will occur if the rebound in the market does not occur

Table 2-11: Percent Annual Growth Using Various Years of History from 20 Years to 4 Years by Report Segment, 1991 to 2011

	%						
Market segment	20-year	12-year	10-year	6-year	4-year	Statistical trend, 12-year	2001-2007 growth
OUTDOOR							
Lawn and garden fertilizers	3.8	2.1	1.0	(1.2)	(1.5)	1.8	3.4
Herbicides	3.7	2.8	2.5	2.4	1.8	1.2	3.4
Outdoor insecticides	4.2	3.1	2.0	1.6	1.0	0.4	4.6
Insect repellents	7.3	8.5	8.2	8.4	3.0	1.6	14.3
Fungicides	6.9	6.1	5.0	5.6	4.6	0.4	6.7
Rodenticides	5.0	5.8	6.4	8.2	10.7	(0.3)	4.6
Total	4.3	3.3	2.5	1.5	0.8	1.2	4.7
HOUSEHOLD AND PET							
Houseplant fertilizers	1.3	2.5	3.0	3.4	5.2	1.0	1.2
Household insecticides	0.8	(0.5)	(0.8)	(1.0)	(1.4)	0.7	(0.5)
Pet insecticides	11.8	3.8	4.3	4.5	3.4	(0.1)	5.0
Total	5.5	2.3	2.5	2.7	2.0	0.2	2.9
TOTAL	4.8	2.9	2.5	2.0	1.3	0.8	4.0

From this range of possible data, we have selected the following growth rates to best represent the combination of macro-economic projections and industry survey data that we have used to develop the FutureView forecast.

Table 2-12: Likely Case Forecast Growth Rates by Period and Product Segment, 2016 to 2021

	\$ Million		
Market segment	2016	2021	CAGR, %
OUTDOOR			
Insect repellents	410.8	476.2	3.0
Outdoor insecticides	623.2	705.1	2.5
Lawn fertilizers	873.9	964.8	2.0
Garden fertilizers	334.1	368.9	2.0
Garden and nonselective herbicides	317.2	350.2	2.0
Fungicides	65.5	70.9	1.6
Lawn herbicides	168.1	181.1	1.5
Total	2,792.8	3,117.2	2.2
HOUSEHOLD AND PET			
Houseplant fertilizers	67.4	70.8	1.0
Household insecticides	504.7	525.2	0.8
Pet insecticides	1,473.4	1,667.0	2.5
Rodenticides	194.9	199.8	0.5
Total	2,240.4	2,462.8	1.9
TOTAL	5,033.2	5,580.0	2.1
a- In a few cases, we used judgment to adjust the historical rate if we felt it did not accurately represent the outlook going forward.			

MOST LIKELY SCENARIO

The overall market is expected to grow at the annual rate of 2.08% by 2021, up from \$5.0 billion to \$5.6 billion. The outdoor category is projected to grow at 2.22% to \$3.1 billion, and the household and pet segment is projected to grow at 1.91% to \$2.5 billion.

Table 2-13: Likely Forecast Scenario for the U.S. Consumer Pesticides and Fertilizers Market by Market Segment and Major Category, 2016 to 2021

	\$ Million					
Market segment	2017	2018	2019	2020	2021	Annual growth, %
OUTDOOR						
Outdoor insecticides	638.8	654.7	671.1	687.9	705.1	2.50
Lawn herbicides	170.6	173.2	175.8	178.4	181.1	1.50
Garden fertilizers	340.8	347.6	354.5	361.6	368.9	2.00
Lawn fertilizers	891.4	909.2	927.4	945.9	964.8	2.00
Garden and nonselective herbicides	323.5	330	336.6	343.3	350.2	2.00
Insect repellents	423.1	435.8	448.9	462.4	476.2	3.00
Fungicides	66.5	67.0	68.7	69.8	70.9	1.60
Total	2,854.7	2,917.5	2,983.0	3,049.3	3,117.2	2.22
HOUSEHOLD AND PET						
Houseplant fertilizers	68.1	68.8	69.4	70.1	70.8	1.00
Household insecticides	508.7	512.8	516.9	521.1	525.2	0.80
Pet insecticides	1,510.2	1,548.0	1,586.7	1,626.4	1,667.0	2.50
Rodenticides	195.9	196.9	197.8	198.8	199.8	0.50
Total	2,282.9	2,326.5	2,370.8	2,416.4	2,462.8	1.91
TOTAL	5,143.9	5,257.1	5,372.8	5,491.0	5,580.0	2.08
a- Total may not add due to rounding.						

Likely case assumptions

Lawn and garden fertilizers, herbicides, insecticides, and fungicides

- Housing starts are flat to slightly increasing, adding a few additional lawns and gardens to the current base through new construction.
- Housing values continue to be weak early in the forecast period; investment in beautifying property is inhibited by foreclosures, but continues in the existing consumer base.
- General economic growth is flat, but continues to provide sufficient income for consumer product purchases in the base consumer group.
- No new environmental restrictions on lawn and garden pesticides are introduced.
- No large-scale drought occurs that would decrease the need for fungicides.

Insect repellents

- West Nile virus continues to be perceived as a threat.
- No large-scale drought occurs that would decrease the mosquito population.
- New active ingredients, such as picaridin, are widely accepted.
- Outdoor activities, such as camping, kayaking, and hiking, remain popular.

Houseplant fertilizers, household insecticides, and rodenticides

- Disposable income growth bottoms out in 2012 and begins to rebound at the end of the year.
- Housing starts remain flat to slightly increasing, adding fewer additional homes to the current base through new construction.
- The economy continues to provide sufficient income to sustain consumer lawn and garden purchases, but there is little if any growth in disposable income.
- The houseplant market remains stable at or slightly above the current level.
- Control of rodents remains important to homeowners.

Pet insecticides

- The U.S. pet population continues to increase slightly, adding to the current base.
- Flea and tick pressures remain stable.
- Spending on pet products grows less rapidly than it has in the recent past, but is not dramatically affected by the slow economy.

OPTIMISTIC AND PESSIMISTIC CASE SCENARIOS

Every forecast has a range of possible outcomes around it. For this reason, Kline publishes an optimistic forecast and pessimistic forecast to accompany its likely case. The growth rates for the optimistic case are taken from the two fastest growing periods in the historical data in this report.

The growth rates for the pessimistic case are taken from the lowest growth period in the historical data. The optimistic view of the overall market is for a growth rate of 4.0% annually in 2012 and 2013, and a jump to 4.8% from the years of 2014-2016 of the forecast, while the pessimistic view is for the market to grow at 1.2% in both periods.

Table 2-14: Compound Annual Growth Rate Percentages by Period and Case, 2011 to 2016

Market segment	%					
	Likely case		Optimistic case		Pessimistic case	
	2011-2013	2014-2016	2011-2013	2014-2016	2011-2013	2014-2016
OUTDOOR						
Lawn and garden fertilizers	0.5	3.4	3.4	3.8	1.8	1.8
Herbicides	1.8	3.4	3.4	3.7	1.2	1.2
Outdoor insecticides	1.0	4.6	4.6	4.2	0.4	0.4
Insect repellents	3.0	8.0	14.3	7.3	1.6	1.6
Fungicides	4.6	6.7	6.7	6.9	0.4	0.4
Rodenticides	5.2	4.6	4.6	5.0	(0.3)	(0.3)
Total	1.5	4.4	4.7	4.3	1.2	1.2
HOUSEHOLD AND PET						
Houseplant fertilizers	0.5	1.2	1.2	1.3	1.0	1.0
Household insecticides	0.5	2.0	(0.5)	0.8	0.7	0.7
Pet insecticides	3.4	5.0	5.0	11.8	(0.1)	(0.1)
Total	2.5	4.1	2.9	5.5	0.2	0.2
TOTAL	1.9	4.3	4.0	4.8	0.8	0.8

OPTIMISTIC SCENARIO

Kline's total industry forecast in the optimistic scenario to 2016 is for growth to reach \$6.0 billion and a CAGR of 3.5%. Total outdoor is projected to grow at 3.5% to \$3.3 billion, while total household and pet is projected to grow to \$2.7 billion, or 3.5%.

Table 2-15: Optimistic Forecast Scenario for the U.S. Consumer Pesticides and Fertilizers Market by Market Segment and Major Category, 2016 to 2021

	\$ Million					
Market segment	2017	2018	2019	2020	2021	CAGR, %
OUTDOOR MARKETS						
Outdoor insecticides	646.9	671.5	697.0	723.5	751.0	3.8
Lawn herbicides	172.3	176.6	181.0	185.6	190.2	2.5
Garden fertilizers	344.1	354.4	365.1	376.0	387.3	3.0
Lawn fertilizers	900.1	927.1	954.9	983.6	1,013.1	3.0
Garden and nonselective herbicides	328.3	339.8	351.7	364.6	376.7	3.5
Insect repellents	431.3	452.9	475.6	499.3	524.3	5.0
Fungicides	67.3	69.2	71.2	73.1	75.2	2.8
Total	2,890.3	2,991.5	3,096.5	3,205.7	3,317.8	3.5
HOUSEHOLD AND PET MARKETS						
Houseplant fertilizers	68.7	70.1	71.5	73.0	74.4	2.0
Household insecticides	517.3	530.3	543.5	557.1	571.0	2.5
Pet insecticides	1,532.2	1,593.5	1,657.3	1,723.6	1,792.5	4.0
Rodenticides	199.8	204.8	209.9	215.1	220.5	2.5
Total	2,318.0	2,398.7	2,482.2	2,568.8	2,658.4	3.5
TOTAL	5,208.3	5,390.2	5,578.7	5,774.5	5,976.2	3.5

a- Total may not add due to rounding.

Optimistic case assumptions

Lawn and garden fertilizers, herbicides, insecticides, and fungicides

- Housing starts rebound more quickly than expected, adding additional lawns and gardens to the current base through new construction.
- Housing values start to rebound in 2013, encouraging growth in investment in beautifying property beyond the base of consistent spending consumers.
- General economic growth restarts to provide growing income for consumer product purchases.
- No new environmental restrictions on lawn and garden pesticides are introduced.
- No large-scale drought occurs that would decrease the need for fungicides.
- Increased gasoline prices keeps consumers at home for vacations, and gardening becomes an even more popular pastime.

Insect repellents

- West Nile virus continues to be a threat or is perceived as even more of a threat.
- No large-scale drought occurs that would decrease the mosquito population.
- New active ingredients, such as picaridin, are widely accepted.
- Outdoor activities, such as camping, kayaking, and hiking, remain popular.
- New fears, such as bird flu or terrorist activities, abroad spur growth in vacations in the United States.

Houseplant fertilizers, household insecticides, and rodenticides

- Housing starts rebound more quickly than expected, adding additional homes to the current base through new construction.
- Housing values start to rebound in 2013, encouraging growth in investment in beautifying property beyond the base of consistent spending consumers.
- The houseplant market increases as indoor plants grow in popularity.
- Gasoline prices revert to higher levels and keep consumers at home during vacations, making home pest control more of a necessity.
- Rodent control grows in importance due to new rodent-borne diseases.

Pet insecticides

- The U.S. pet population continues to increase, adding to the current base.
- Flea and tick pressures grow as lyme disease grows as a threat.
- No impact is felt on pet spending from current economic factors.

PESSIMISTIC SCENARIO

The pessimistic scenario anticipates that the economy will not improve as projected in the likely case. Growth percentages are derived from the lowest growth periods experienced over the last five to six years by the consumer pesticides and fertilizers sector, based on Kline's historical data.

We used judgment in a few cases where the recent short-term sales levels showed negative growth, since that was not deemed to be representative of even our pessimistic case. It is not that we do not believe some of the segments will decline in sales; it is rather the case that no negative growth segments are obvious at the time of writing.

The pessimistic scenario projects total sales for the consumer pesticides and fertilizers category to grow at 1.2% to \$5.3 billion. The two sub-segments are projected to grow at 1.3% to \$3.9 billion for total outdoor and 1.1% to \$2.4 billion for total household and pet.

Table 2-16: Pessimistic Forecast Scenario for the U.S. Consumer Pesticides and Fertilizers Market by Market Segment and Major Category, 2016 to 2021

	\$ Million					
Market segment	2017	2018	2019	2020	2021	CAGR, %
OUTDOOR						
Outdoor insecticides	632.5	642.0	651.7	661.4	671.4	1.0
Lawn herbicides	169.8	171.5	173.2	174.9	176.7	1.5
Garden fertilizers	337.4	340.4	344.7	347.7	351.1	1.0
Lawn fertilizers	884.4	895.0	905.7	916.6	927.6	1.2
Garden and nonselective herbicides	320.4	323.6	326.8	330.1	333.4	1.0
Insect repellents	419.0	427.4	435.9	444.7	453.6	2.0
Fungicides	66.0	66.6	67.1	67.6	68.2	0.8
Total	2,829.5	2,866.5	2,905.1	2,943.0	2,982.0	1.3
HOUSEHOLD AND PET						
Houseplant fertilizers	67.7	68.1	68.4	68.8	69.1	0.5
Household insecticides	506.2	507.7	509.3	510.8	512.3	0.3
Pet insecticides	1,495.5	1,517.9	1,540.9	1,563.8	1,587.3	1.5
Rodenticides	195.3	195.7	196.1	196.5	196.9	0.2
Total	2,264.7	2,289.4	2,314.7	2,339.9	2,365.6	1.1
TOTAL	5,094.2	5,155.9	5,219.8	5,282.9	5,347.6	1.2

Pessimistic case assumptions

Lawn and garden fertilizers, herbicides, insecticides, and fungicides

- Housing starts do not rebound as projected and home values stay low longer than projected in our likely case.
- The economy contracts and income that might be spent on consumer lawn and garden purchases is diverted elsewhere.
- New environmental restrictions on lawn and garden pesticides are introduced.
- Large-scale drought occurs, which decreases the need for fungicides.

Insect repellents

- West Nile virus is no longer perceived as a threat.
- Large-scale drought occurs and decreases the mosquito population.
- Outdoor activities, such as camping, kayaking, and hiking, become less popular due to external factors, such as the bird flu virus.

Houseplant fertilizers, household insecticides, and rodenticides

- The housing market slows in 2018 through 2021, aiding a general slowdown on consumer spending.
- The economy contracts, and income that might be spent on consumer product purchases is diverted elsewhere.
- Some environmental factors decrease pest pressures.

Pet insecticides

- The U.S. pet population flattens.
- Flea and tick pressures decrease due to dry weather over several seasons.
- Economic pressures force some reduction in spending on pets for some families.

COMPARISON OF FORECAST SCENARIOS

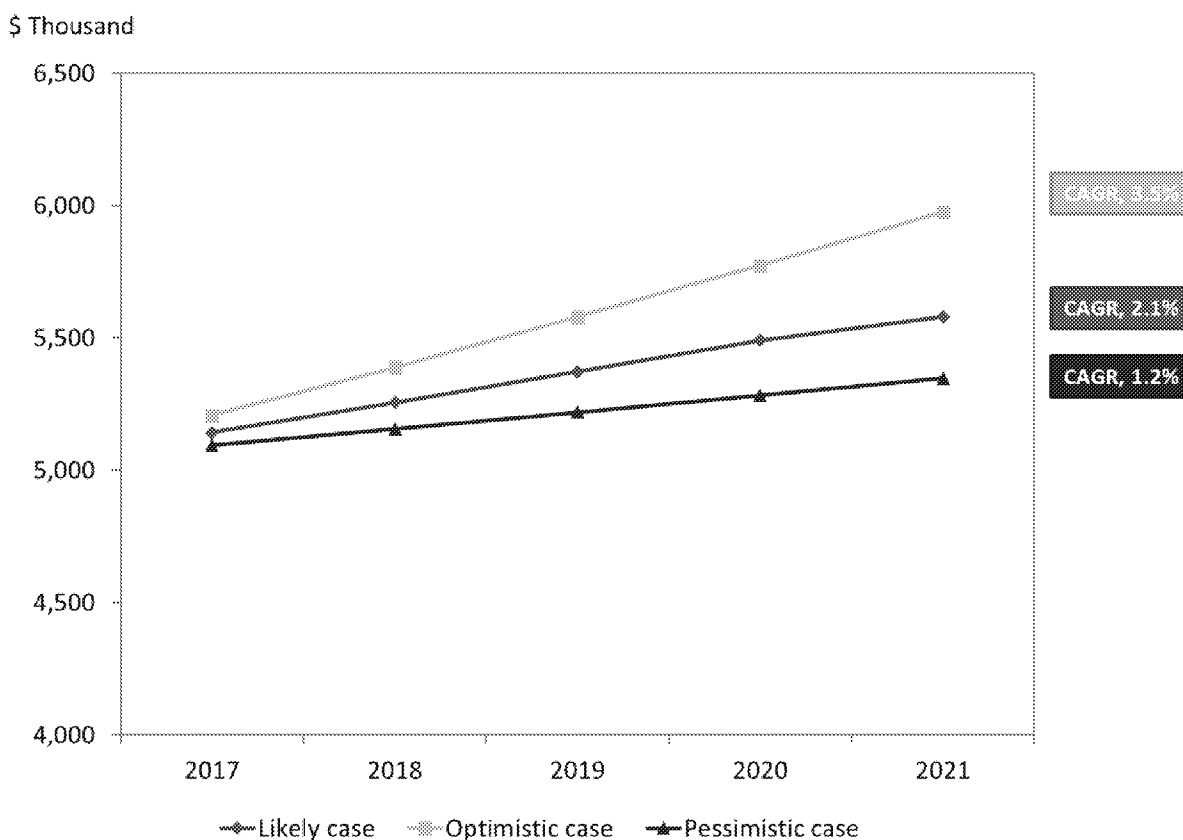
The three forecast scenarios are presented graphically and in table form. The three graphs compare the forecast scenarios for the total category, the outdoor category, and the household and pet category.

Total market comparison

Table 2-17: Forecast Scenario Comparison for the Total Consumer Pesticides and Fertilizers Market, 2017 to 2021

Total market scenario	\$ Thousand					CAGR, %
	2017	2018	2019	2020	2021	
Likely case	5,144	5,257	5,373	5,491	5,580	2.1
Optimistic case	5,208	5,390	5,579	5,775	5,976	3.5
Pessimistic case	5,094	5,156	5,220	5,283	5,348	1.2

Figure 2-6: FutureView Forecast Scenarios for the U.S. Consumer Pesticides and Fertilizers Market, 2017 to 2021

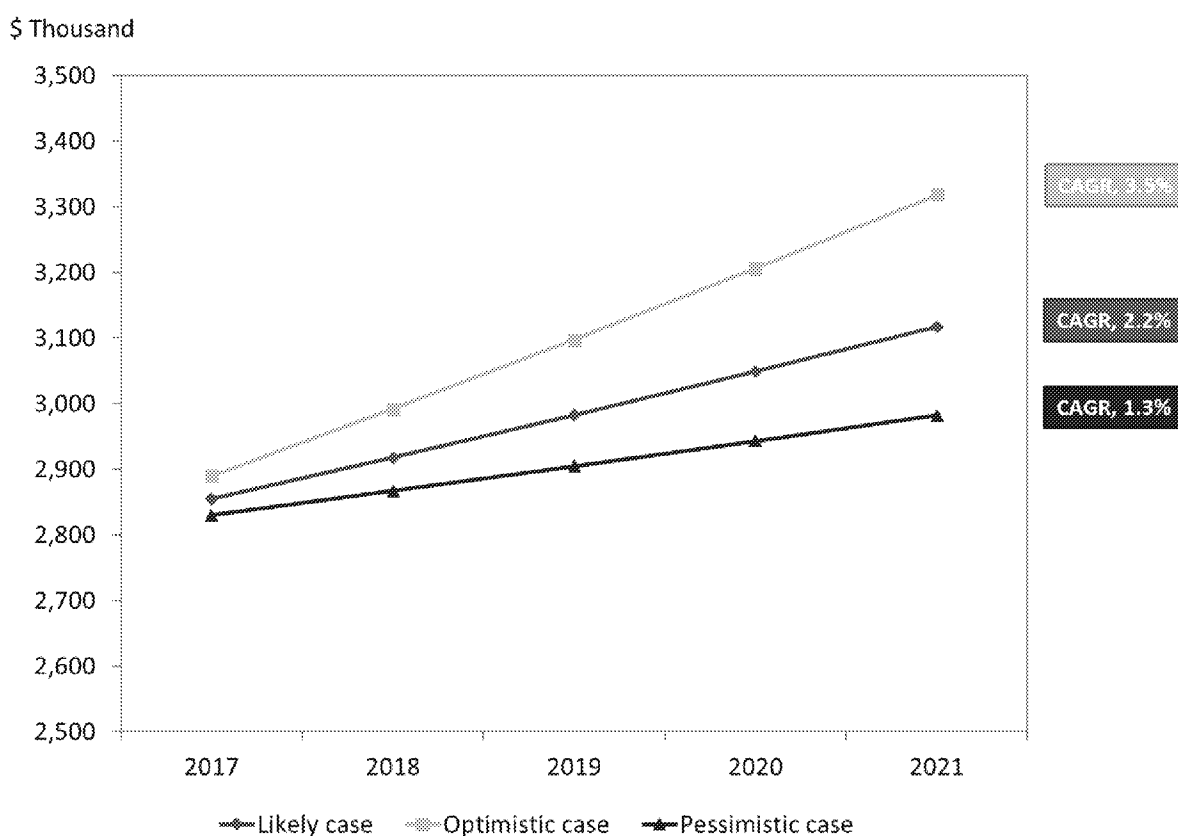


Outdoor segment comparison

Table 2-18: Forecast Scenario Comparison for Outdoor Market Segment, 2017 to 2021

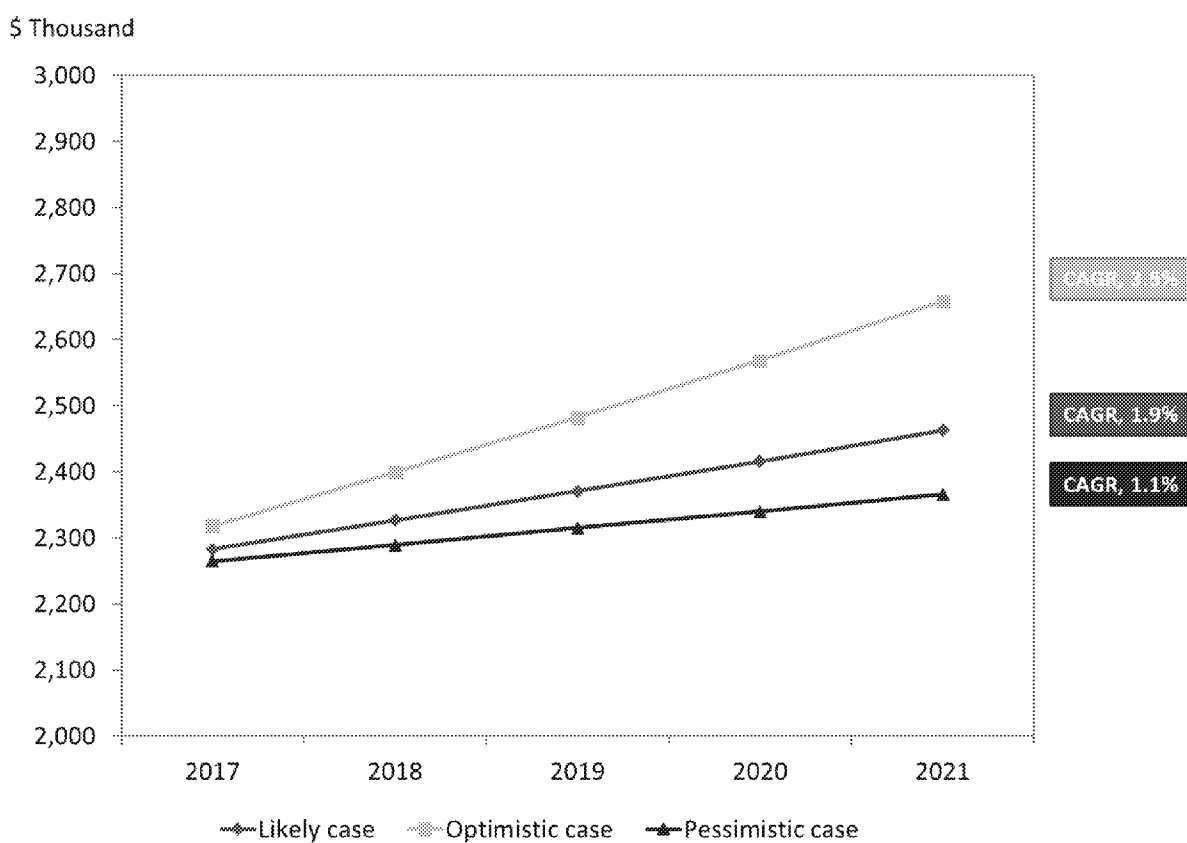
Outdoor market scenario	\$ Thousand					CAGR, %
	2017	2018	2019	2020	2021	
Likely case	2,855	2,918	2,983	3,049	3,117	2.2
Optimistic case	2,890	2,992	3,097	3,206	3,318	3.5
Pessimistic case	2,830	2,867	2,905	2,943	2,982	1.3

Figure 2-7: FutureView Forecast Scenarios for the Outdoor Segment of the U.S. Consumer Pesticides and Fertilizers Market, 2017 to 2021



*Household and pet segment comparison***Table 2-19: Forecast Scenario Comparison for Household and Pet Market Segment, 2017 to 2021**

Household and pet market scenario	\$ Thousand					CAGR, %
	2017	2018	2019	2020	2021	
Likely case	2,283	2,327	2,371	2,416	2,463	1.9
Optimistic case	2,318	2,399	2,482	2,569	2,658	3.5
Pessimistic case	2,265	2,289	2,315	2,340	2,366	1.1

Figure 2-8: FutureView Forecast Scenarios for the Household and Pet Segment of the U.S. Consumer Pesticides and Fertilizers Market, 2017 to 2021

3. FERTILIZERS

COVERAGE

This section covers fertilizers and plant foods sold through retail outlets, divided according to use, as follows:

- 3A. Lawn Fertilizers
- 3B. Garden Fertilizers
- 3C. Houseplant Fertilizers

Fertilizers, including those combined with insecticides, herbicides, fungicides, dried manure, activated sewage sludge, and other organic fertilizers, are covered in this section. Also included are products containing secondary nutrients and micronutrients.

THE MARKET

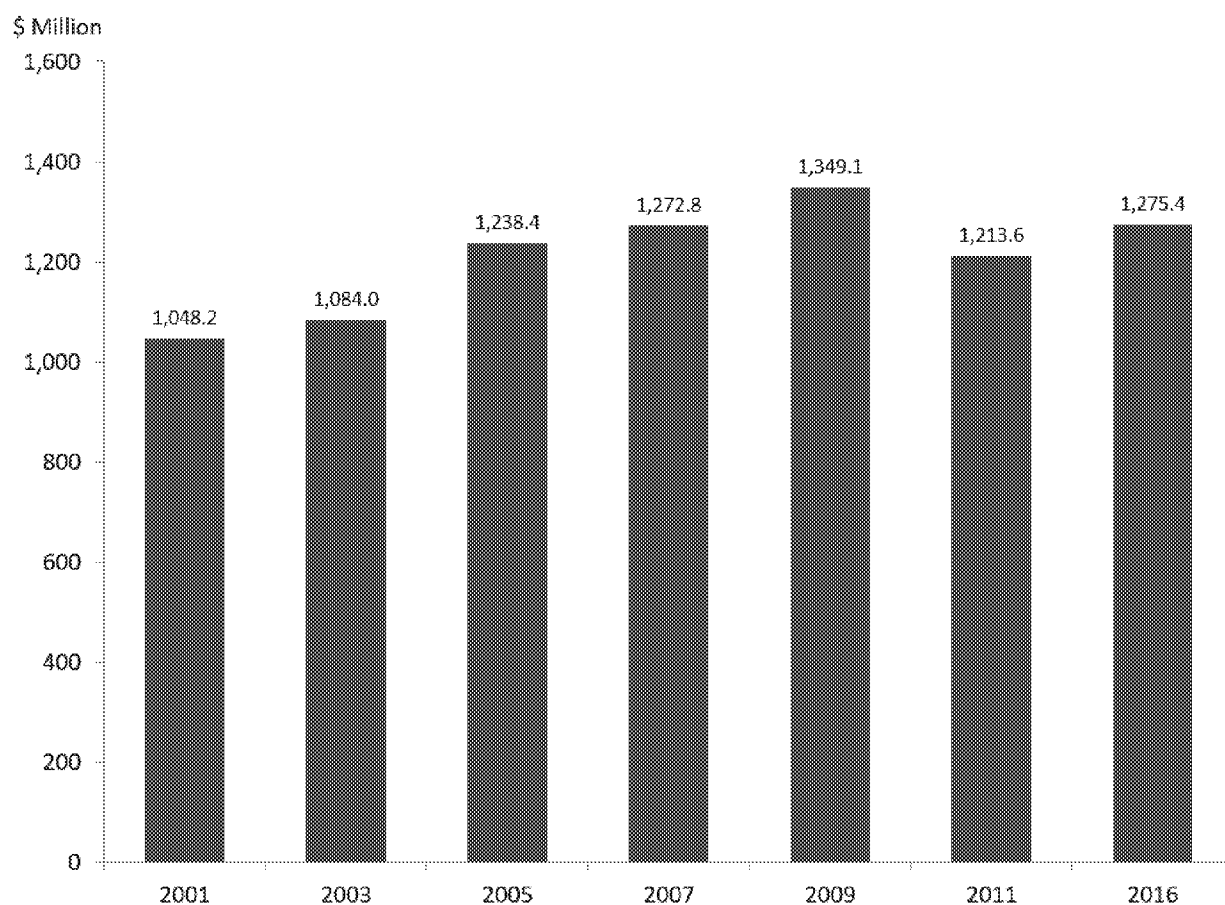
Marketers' sales

Marketers' sales of lawn, garden, and houseplant fertilizers in the United States are estimated at \$1,275.4 million in 2016, representing an annualized increase of 1.0% and a net increase of 5.1% from sales of \$1,213.6 million in 2011.

Table 3-1: Sales of Fertilizers to the U.S. Consumer Market, 2001-2016

Year-a	\$ Million	Average annual growth, %
2001	1,048.2	13.1
2003	1,084.0	1.7
2005	1,238.4	7.1
2007	1,272.8	1.4
2009	1,349.1	3.0
2011	1,213.6	(5.0)
2016	1,275.4	1.0

a- This study was not conducted in 2002, 2004, 2006, 2008, 2010, 2012, 2013, 2014, or 2015.

Figure 3-1: Total Fertilizer Category Sales in the United States, 2001 to 2016

Sales by region

The South leads in consumption of fertilizers with approximately 39.0% of total sales in 2016, followed by the Midwest with 23.8%. The West ranks third with 18.9%.

Table 3-2: Sales of Fertilizers to the U.S. Consumer Market by Region, 2016

Region	\$ Million	% Of total
South	500.4	39.2
Midwest	303.8	23.8
West	241.0	18.9
Northeast	230.2	18.0
Total	1,275.4	100.0

Retail shipments

Shipments of consumer fertilizers are estimated at 3,218.7 million lb and 2.9 million gal of formulated product in 2016.

Application

Lawn fertilizers account for nearly 69.0% of total sales and nearly 95.0% of the physical weight. Garden fertilizers account for 26.2% of sales, and houseplant fertilizers account for 5.3%.

Table 3-3: Sales of Fertilizers to the U.S. Consumer Market by Market Segment, 2016

Application	Million			% Of total		
	Lb	Gal	\$	Weight	Volume	Value
Lawn	3,054.2	1.2	873.9	94.9	41.4	68.5
Garden	144.7	1.2	334.1	4.5	41.4	26.2
Houseplant	19.8	0.5	67.4	0.6	17.2	5.3
Total	3,218.7	2.9	1,275.4	100.0	100.0	100.0

Product form

Solid fertilizers account for nearly 92.0% of total sales in 2016.

Table 3-4: Sales of Fertilizers to the U.S. Consumer Market by Product Form, 2016

Product form	Million			% Of total value
	Lb	Gal	\$	
Solid	3,218.7	-	1,167.6	91.5
Liquid	-	2.9	107.8	8.5
Total	3,218.7	2.9	1,275.4	100.0

Product type

Straight fertilizers, manures, and other organic products account for approximately 53.0% of total sales. Fertilizer-pesticide combinations, both herbicides and insecticides, contribute the remaining 47.0% of sales.

Table 3-5: Sales of Fertilizers to the U.S. Consumer Market for Straight and Combined with Pesticides, 2016

Product type	Million			% Of total		
	Lb	Gal	\$	Weight	Volume	Value
Straight	1,344.7	2.4	675.2	41.8	82.8	52.9
Combination	1,874.0	0.5	600.2	58.2	17.2	47.1
Total	3,218.7	2.9	1,275.4	100.0	100.0	100.0

Product materials

Nitrogen accounts for about 21.0% of the total materials used. Primary nutrients in the total account for approximately 27.0% of the total used. In comparison, toxicants represent less than 1.0% of the total weight.

Table 3-6: Volumes of Active Ingredients used in Fertilizers in U.S. Consumer Market, 2016

Materials	Million lb	% Of total
Nitrogen	662.5	20.6
Phosphates	78.5	2.4
Potash	115.8	3.6
Other nutrients-a	145.5	4.5
Toxicants-b	15.1	0.5
All other-c	2,205.1	68.4
Total	3,222.5	100.0
a- Includes secondary nutrients, micronutrients, and trace elements.		
b- Includes herbicides, insecticides, and fungicides.		
c- Includes manures and carrier materials other than water.		

ACQUISITIONS, DIVESTITURES, AND NEW PRODUCTS

The increasing concentration of retail sales of consumer lawn and garden products in the hands of mass merchandisers, home improvement centers, and other large buying groups has been driving a restructuring and consolidation of suppliers. Since the last edition of this report was published, mergers and acquisitions have continued. Many of these new and changing business relationships affect the fertilizer segment. Some examples are:

- In 2016, Scotts Miracle-Gro, through its subsidiary Hawthorne Gardening Company, completes the acquisition of American Agritech, L.L.C., doing business as Botanicare, an Arizona-based leading producer of plant nutrients, plant supplements, and growing systems used for hydroponic gardening, for an estimated purchase price of \$90.0 million.
- The retail group of The Andersons, which currently has four stores in Maumee, Toledo, and Columbus, Ohio, has announced plans to exit the retail business and close its stores by the end of 2017. This is due to pre-tax losses in excess of \$20.0 million in the past eight years in the company's retail segment, despite the fact that it has already closed three stores and invested in others in order to maintain its presence. Due to changing consumer preferences, sales have declined and are expected to decline in the future.
- In 2015, Scotts Miracle-Gro acquired the assets of General Hydroponics and Vermicrop for \$120.0 million and \$15.0 million, respectively. This transaction provides Scotts with an additional entry in the indoor and urban gardening category, which is a part of the company's long-term growth strategy. General Hydroponics and Vermicrop are leading producers of liquid plant food products, growing media, and accessories for hydroponic gardening.
- In 2015, Centre Lane Partners acquired Easy Gardener and later in 2016, Easy Gardener was renamed to The Jobe's Company. Since then, the company has been focused on expanding its market share in natural and organic garden and lawn products.
- In 2012, Howard Johnson's Enterprises, a Missouri-based manufacturer, marketer, and innovator of lawn and garden products for consumer and professional use, was acquired by Central Garden & Pet.

New product introductions in the reporting period include the following:

- In 2016, Espoma introduces a new line of liquid plant foods. The company's Organic Liquid Plant Foods are proven to grow bigger and better plants. These concentrates are comprised of natural proteins that are enhanced with humic acid, kelp extracts, and a set of beneficiary microbes that yield comprehensive results. The products in this category include Bloom! 1-3-1, Start! 1-2-2, Grow! 2-2-2, and Fish! 2-3-0. Bloom! 1-3-1 stimulates plentiful fruit and promotes flowering. Start! 1-2-2 is a starter plant food that helps in establishing plants faster while growing strong roots. Grow! 2-2-2 is an all-purpose plant food that promotes root growth. Fish! 2-3-0 is a fish fertilizer that boosts growth.
- Organic lawn care products are gaining ground in this segment. Products such as corn gluten meal, molasses, seaweed, kelp, and compost are helping to improve soil health, which, in turn, helps to create thicker, stronger turf.
- Recent new additions to Monterey's product line include Dr. Iron Liquid and RTU spray, Epsom Salts, Fish & Poop, Foli-Cal, Grass Getter, GreenTree Pro Nutriboosters, Mark-It Blue, Monterey Perc-O-Late Plus, Nature's Own Spray Helper, Sequestar Iron 6%, and Take Down Garden Spray.

GOVERNMENT REGULATIONS

Fertilizers are not regulated by the federal government, but rather by state agriculture departments and local governments. Many states have adopted as law the Uniform State Fertilizer Bill, initiated by the Association of American Plant Food Control Officials, for labeling, registration, licensing, inspection tonnage reports, and other activities. However, some states still use the bill only as a guideline.

Although it is primarily an agricultural issue, government and public concern over groundwater contamination from fertilizers has begun to affect product formulation, allowing higher-priced controlled-release products to gain more prominence in the market. A number of municipalities have passed ordinances in the past few years that limit the amount or prohibit the application of phosphorous to home lawns. In some cases, such as in Commerce Township, Michigan, fertilizers with phosphorous cannot be applied to homeowner's lawns and the amount of nitrogen that can be applied is limited. This issue will continue to increase as fertilizer runoff continues to cause groundwater contamination problems.

A growing number of states, individual counties, and municipalities have banned or restricted the disposal of grass, leaves, and other yard waste at landfills due to capacity problems. Several years ago, the Professional Lawn Care Association of America instituted an environmental awareness campaign aimed at consumers that promotes the recycling of grass clippings and emphasizes the benefits of this practice for the lawn and the environment. Kmart and several other suppliers are participating in the campaign through incorporation of the logo and educational messages on packaging.

COMPETITION

Combined sales of lawn, garden, and houseplant fertilizers for the nine largest suppliers of consumer products in 2016 are presented in Table 3-7. Collectively, they account for approximately 93.0% of the total market, although the degree of concentration varies according to product category. Scotts represents nearly three-quarters of total sales.

Table 3-7: U.S. Sales of Consumer Fertilizers by Major Marketer, 2016

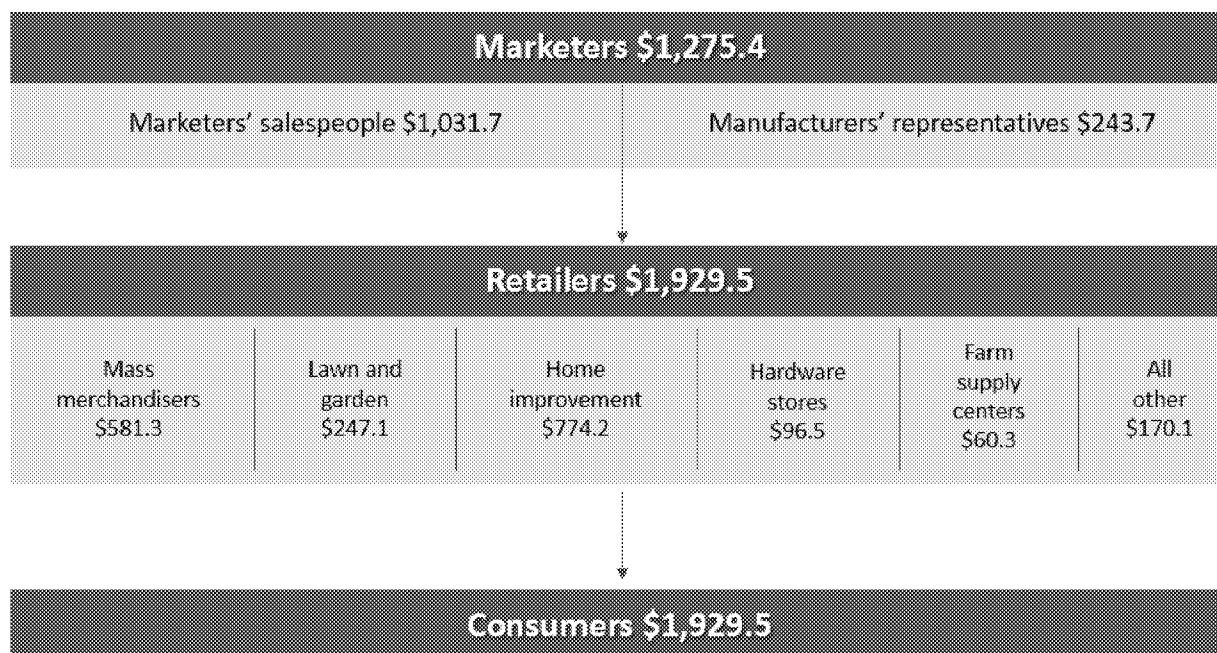
Company	\$ Million	% Of total
Scotts	952.9	74.7
Lebanon Seaboard	46.0	3.6
The Andersons	35.7	2.8
Central Garden & Pet	33.8	2.6
Voluntary Purchasing Groups	33.0	2.6
The Jobe's Company	27.5	2.2
Woodstream	25.0	2.0
Spectrum Brands	18.3	1.4
Espoma	17.9	1.4
All other	85.3	6.7
Total	1,275.4	100.0

DISTRIBUTION CHANNELS

Major marketers primarily use their own sales forces, but smaller suppliers more commonly sell through manufacturers' representatives.

Figure 3-2: Estimated U.S. Distribution of Consumer Lawn, Garden, and Houseplant Fertilizers, 2016

Millions of marketers' dollars



The channel data reflects the number of respondents that purchase the product category in each type of outlet. This historical method does not take into account the impact of income differences on channel revenue. To account for that impact, this analysis used the respondents with incomes of more than \$50,000 per year to reflect the higher disposable incomes spent on lawn, garden, and home products, as well as larger lot sizes associated with these higher-income individuals. Both factors would tend to increase their spending per purchase. Kline & Company has not altered the tabulations shown in this section, but has used only the higher-income respondents to calculate distribution channel importance.

Approximately 80.0% of fertilizer sales are now made directly to retail accounts, with most of the remainder handled by distributors and wholesalers. Several major suppliers (notably Scotts) that had previously sold almost exclusively through distributors began selling directly to selected retailers during the last several years. Direct sales of lawn and garden fertilizers are expected to continue to increase in significance because of the size and importance of the large retail chains in the industry. Except for Scotts and Spectrum Brands, suppliers of houseplant fertilizers are often too small to provide warehouse facilities or carry high account receivables for their customers, so they rely on distributors to move their products.

Home improvement centers are the most important retail outlets for consumer fertilizers, accounting for 40.0% of marketers' sales in 2016. Mass merchandise stores have increased in importance in recent years, now with 30.0% of sales. Lawn and garden centers have increased in importance in the reporting period, growing from about 10.0% to 13.0%.

Table 3-8: Sales of Fertilizers to the U.S. Consumer Market by Type of Retail Establishment, 2016

Retail outlet	\$ Million	% Of total
Home improvement centers	774.2	40.1
Mass merchandise stores	581.3	30.1
Lawn and garden centers-a	247.1	12.8
Hardware stores	96.5	5.0
Farm supply stores	60.3	3.1
All other-b	170.1	8.8
Total	1,929.5	100.0
a- Includes retail nurseries.		
b- Includes supermarket and grocery stores, warehouse clubs, mail order, and other retail outlets.		

OUTLOOK

Sales of consumer fertilizers have grown more rapidly in recent years, following a long period of slow growth. The rapid influx of combination products seen in the past few years is expected to flatten or actually decline, and the use of more organic fertilizers is beginning to increase.

Public and regulatory concern over environmental damage from fertilizer leaching and runoff is likely to favor marketers of controlled-release synthetics and organic products. The introduction of organic fertilizers will increase, and in many cases their use will be forced by local government regulations prohibiting or limiting the amount of phosphorous that can be used on home lawns. The emphasis on organic fertilizers may cause the prices of fertilizers to increase.

Sales of consumer fertilizers are projected to reach \$1,404.5 million in 2021 for an annual increase of 2.0%.

Table 3-9: Outlook for Fertilizers in the U.S. Consumer Market, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	1,275.4	-
2021	1,404.5	2.0

3A. LAWN FERTILIZERS

Sales in the lawn fertilizer segment total \$873.9 million in 2016, representing a 1.1% annualized increase from sales of \$829.1 million in 2011.

Since the last edition of this report was published, changes in the following business relationships have affected the lawn fertilizer segment:

- In 2016, Scotts Miracle-Gro, through its subsidiary Hawthorne Gardening Company, completed the acquisition of American Agritech, L.L.C., doing business as Botanicare, an Arizona-based leading producer of plant nutrients, plant supplements, and growing systems used for hydroponic gardening, for an estimated purchase price of \$90.0 million.
- The retail group of The Andersons, which currently has four stores in Maumee, Toledo, and Columbus, Ohio, has announced plans to exit the retail business and close its stores by the end of 2017. This is due to pre-tax losses in excess of \$20.0 million in the past eight years in the company's retail segment, despite the fact that it has already closed three stores and invested in others in order to maintain its presence. Due to changing consumer preferences, sales have declined and are expected to decline in the future.
- In 2015, Scotts Miracle-Gro acquired the assets of General Hydroponics and Vermicrop for \$120.0 million and \$15.0 million, respectively. This transaction provides Scotts with an additional entry in the indoor and urban gardening category, which is a part of the company's long-term growth strategy. General Hydroponics and Vermicrop are leading producers of liquid plant food products, growing media, and accessories for hydroponic gardening.
- In 2015, Centre Lane Partners acquired Easy Gardener and later in 2016, Easy Gardener was renamed to The Jobe's Company. Since then, the company has been focused on expanding its market share in natural and organic garden and lawn products.
- In 2012, Howard Johnson's Enterprises, a Missouri-based manufacturer, marketer, and innovator of lawn and garden products for consumer and professional use, was acquired by Central Garden & Pet.

New product introductions in this segment in the reporting period include the following:

- Organic lawn care products are gaining ground in this segment. Products such as corn gluten meal, molasses, seaweed, kelp, and compost are helping to improve soil health, which, in turn, helps to create thicker, stronger turf.
- Recent new additions to Monterey's product line include Dr. Iron Liquid and RTU spray, Epsom Salts, Fish & Poop, Foli-Cal, Grass Getter, GreenTree Pro Nutriboosters, Mark-It Blue, Monterey Perc-O-Late Plus, Nature's Own Spray Helper, Sequestar Iron 6%, and Take Down Garden Spray.

Environmental issues and related regulatory activity are becoming less problematic. The industry has responded to consumer and governmental concern over groundwater contamination from fertilizers by introducing higher-value controlled-release products. In addition, disposal of grass clippings is less of an issue since mulch suppliers have built businesses based on recycled yard waste collected by municipalities. One example is The Scotts Company, which has developed a business that takes advantage of Hyponex's composting expertise by setting up composting facilities and entering into agreements with municipalities and waste haulers to compost yard waste. The project not only generates fees, but also consumes the compost as a raw material substitute in some products.

PRODUCT DESCRIPTION

Lawn fertilizers are used to encourage strong root development, dense and rapid growth, and better coloration of turf. Some products are designed for general use, while others are formulated for application during different months of the growing season, on different grasses and soils, and in different climates. To be marketed as fertilizers by law, products must contain nitrogen, phosphorus, and potassium, the three major elements essential to plant life. Lawn fertilizers often contain secondary and trace nutrients as well. Fertilizer-pesticide combinations—especially fertilizer-herbicide products commonly called “weed and feed”—are also popular with consumers because of their convenience and with manufacturers and retailers because of their higher margins.

THE MARKET

Marketers' sales

Marketers' sales in the lawn fertilizer segment total \$873.9 million in 2016, representing a 1.1% annualized increase from sales of \$829.1 million in 2011.

Table 3A-1: Sales of Lawn Fertilizers to the U.S. Consumer Market, 2001-2016

Year-a	\$ Million	Average annual growth, %
2001	737.6	12.3
2003	770.3	2.2
2005	892.0	7.6
2007	925.5	1.9
2009	955.1	1.6
2011	829.1	(6.8)
2016	873.9	1.1

a- This study was not conducted in 2002, 2004, 2006, 2008, 2010, 2012, 2013, 2014, or 2015.

Sales by region

The South accounts for more than 39.0% of lawn fertilizer sales, followed by the Midwest with 24.6% and the West and Northeast with 18.4% and 17.6%, respectively.

Table 3A-2: Sales of Lawn Fertilizers to the U.S. Consumer Market by Region, 2016

Region	\$ Million	% Of total
South	344.3	39.4
Midwest	215.0	24.6
West	160.8	18.4
Northeast	153.8	17.6
Total	873.9	100.0

Retail shipments

Shipments of lawn fertilizers to retail outlets are estimated at 3,054.0 million lb and 1.2 million gal of finished products in 2016.

Product form

Solid fertilizers, including granules, pellets, powders, and prills, are still by far the most popular form. Sales of liquid hose-end products have increased slightly as the variety of product options has increased their flexibility over the past few years. Solids currently account for approximately 96.0% of the market.

Table 3A-3: Sales and Volume of Fertilizers to the U.S. Consumer Market by Product Form, 2016

Product form	Million		\$	% Of total value
	Lb	Gal		
Solid	3,054.2	-	838.9	96.0
Liquid	-	1.2	35.0	4.0
Total	3,054.2	1.2	873.9	100.0

Product type

Straight lawn fertilizers account for approximately 34.0% of sales, 39.0% of the total weight of solid products, and 59.0% of the total quantity of liquid products. Fertilizer-herbicide combination products represent approximately 62.0% of sales, 59.0% of total weight, and 41.0% of volume. Other combination products make up the remainder.

Table 3A-4: Sales of Fertilizers to the U.S. Consumer Market for Straight and Combined with Pesticides, 2016

Product type	Million			% Of total		
	Lb	Gal	\$	Weight	Volume	Value
STRAIGHT	1,191.1	0.7	297.1	39.0	59.0	34.0
COMBINATION						
Herbicides	1,802.0	0.5	541.8	59.0	41.0	62.0
Insecticides	61.1	-	35.0	2.0	-	4.0
Total	1,863.1	0.5	576.8	61.0	41.0	66.0
TOTAL	3,054.2	1.2	873.9	100.0	100.0	100.0

Product materials

Nitrogen is the primary nutrient in lawn fertilizers, accounting for 649.0 million lb, or 21.3% of the total weight of solid products, in 2016. Phosphates and potash account for about 2.2% and 3.4%, respectively.

Table 3A-5: Estimated U.S. Consumption of Raw Materials in Consumer Lawn Fertilizers, 2016

Materials	Million lb	% Of total
Nitrogen	649.0	21.3
Phosphates	68.0	2.2
Potash	104.0	3.4
Other nutrients-a	139.0	4.6
Toxicants-b	15.0	0.5
All other-c	2,079.0	68.1
Total	3,054.0	100.0
a- Includes secondary nutrients and micronutrients.		
b- Includes herbicides and insecticides.		
c- Includes carrier materials other than water.		

Pesticide active ingredients used in combination with lawn fertilizers are estimated at 12.9 million lb, or less than 1.0% of total poundage. Herbicides account for more than 98.0% of toxicants used, with insecticides making up the remaining 1.6%.

Table 3A-6: Estimated U.S. Consumption of Active Ingredients in Consumer Lawn Fertilizers, 2016

Active ingredients	Million lb	% Of category	% Of total
HERBICIDES			
2,4-D	5.8	45.7	45.0
mCPP	2.9	22.8	22.5
Pendimethalin	2.6	20.5	20.2
Dicamba	0.7	5.6	5.4
Atrazine	0.3	2.4	2.3
All other-a	0.4	3.1	3.1
Total	12.7	100.0	98.4
INSECTICIDES-b	0.2	100.0	1.6
TOTAL	12.9	100.0	100.0
a- Includes dithiopyr, trifluralin, prodiamine, benefin, and many other herbicides.			
b- Includes bifenthrin, imidacloprid, lambda cyhalothrin, and other insecticides.			

In weed and feed products, 2,4-D remains the most widely used herbicide, accounting for approximately 45.0% of total active ingredient consumption, followed by pendimethalin and mCPP.

Bifenthrin is currently the leading insecticide active ingredient in combination products, due to the phaseout of chlorpyrifos and diazinon a few years ago. It is used at low rates and accounts for less weight of active ingredient in products than previously used actives. Fungicide combination products were not reported in this study.

PRIVATE-LABEL ACTIVITY

Exclusive, or store brands, and brands manufactured under contract remain a significant factor in the lawn fertilizer market, representing approximately 20.0% of marketers' sales in 2016. Kmart and Walmart are the largest marketers of these products. The Andersons, Lebanon Seaboard, Scotts, and Pennington are the largest manufacturers of private-label and contract-packaged granular fertilizers.

PRICES AND MARGINS

The market for straight lawn fertilizers remains price-competitive, but price increases have been instituted by the major marketers. Marketers continue to emphasize combination products: product groups (three- and four-step lawn care programs) and specialty formulations for particular regions, grasses, or problems. The effect of the shift to combinations by consumers has been an increase in average prices paid. Marketers had been emphasizing organic or all-natural fertilizers, but consumer acceptance of organic products for lawn care has not been strong.

Lawn and garden centers typically require 30.0% to 40.0% margins on lawn fertilizers, but discount centers often sell these products at margins of 20.0% to 30.0%. During spring promotions, many retail outlets sell lawn fertilizers as loss leaders to promote store traffic and encourage the purchase of equipment, which is more profitable to retailers. Payment of slotting fees to major retailers for shelf space sometimes substitutes for or enhances retailer margin on sales.

Table 3A-7: Retail Prices of Selected Consumer Lawn Fertilizers in the United States, 2016

Brand	Marketer	Form	Size	Retail price, \$
Scotts Turf Builder with Halts Crabgrass Preventer	Scotts	Granular	40.05 lb	59.98
Scotts Turf Builder Plus 2 Weed Control	Scotts	Liquid	32.0 oz	16.08
Sta-Green 15M Lawn Fertilizer	Turf Care	Granular	42.0 lb	26.37
GreenView Seeding Mulch Lawn Starter 1-3-1	Lebanon Seaboard	Granular	30.0 lb	12.49
Scotts Turf Builder WinterGuard Fall Weed & Feed	Scotts	Granular	15.52 lb	24.97
Scotts Turf Builder SummerGuard Lawn Food with Insect Control	Scotts	Granular	40.05 lb	59.97
Scotts Snap Pac Weed & Feed Fertilizer 25-0-4	Scotts	Granular	41.16 lb	21.48
Bayer Advanced 10M Triple Action Lawn Fertilizer	SBM	Granular	24.0 lb	29.88
Ironite 1-0-1	Pennington	Granular	15.0 lb	19.57
Lilly Miller Bone Meal Lawn Fertilizer	Central Garden & Pet	Granular	15.0 lb	17.57

Most granular lawn fertilizers are packaged in polyethylene or multi-walled paper bags. Fertilizers with lower nutrient analyses are usually sold in 20 lb to 60 lb bags. High-analysis and fertilizer-pesticide combination products are typically sold in 15 lb to 40 lb bags. Bag sizes are selected for the number of square feet covered by the volume of fertilizer the bags contain.

Liquid hose-end fertilizers are typically packaged in 1 qt plastic spray bottles that attach directly to a garden hose.

The most popular coverage size for fertilizer packages are 5,000 sq ft or 15,000 sq ft. As fertilizer manufacturers have increased the nitrogen content of their products to promote more rapid and dramatic greening of lawns, lighter-weight carrier materials have come into use, resulting in lighter, smaller package sizes with the same effective coverage as older products.

Package design has become increasingly important in the lawn fertilizer segment in terms of both eye appeal and conveyance of information. Many marketers have overhauled their package and point-of-purchase display graphics during the past several years, providing more consumer-friendly and informative packaging.

COMPETITION

With the full benefit of the acquisition of Stern's Miracle-Gro Products, Inc. and the exit of the fertilizer market by Spectrum Brands, Scotts holds the dominant position as the leading supplier of consumer lawn fertilizers, now accounting for nearly 77.0% of total category sales. Its closest competitor, The Andersons, represents only 3.6% of sales in 2016. The next closest competitor, Central Garden & Pet, follows with 3.5% of sales.

Figure 3A-1: U.S. Sales of Consumer Lawn Fertilizers by Major Marketer, 2016

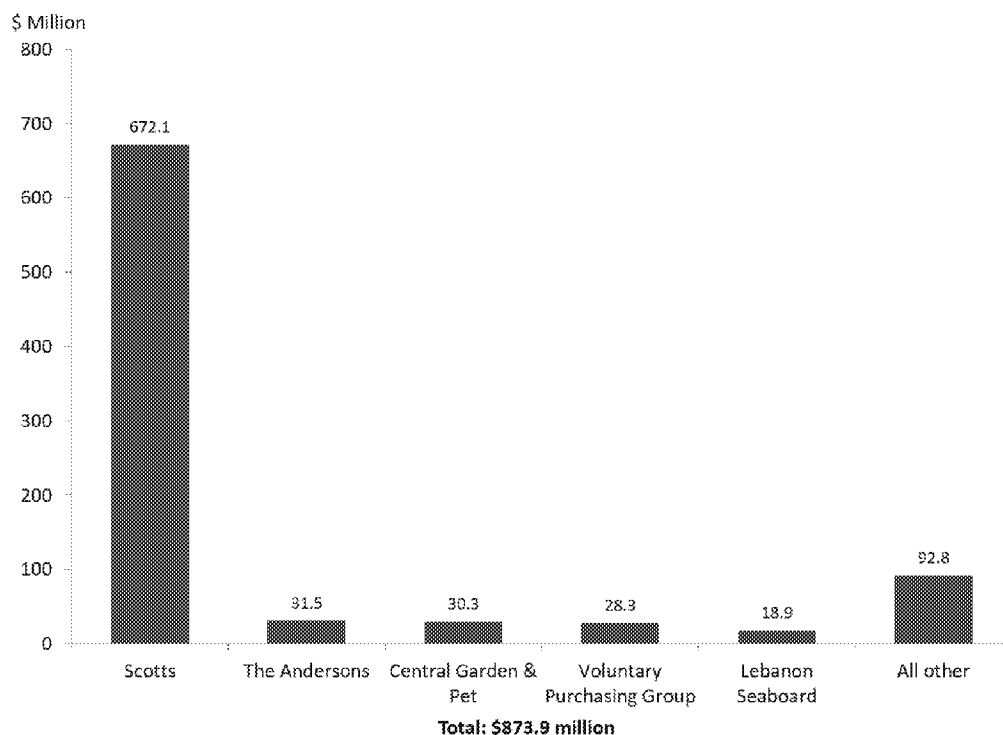


Table 3A-8: U.S. Sales of Consumer Lawn Fertilizers by Major Marketer, 2016

Brands	Company	\$ Thousand-a	% Of total
Scotts, Miracle-Gro, Lawn Pro, Turf Builder, Organic Choice	Scotts	672,150	76.9
The Andersons, Fortify, Supreme Green, Nurserymen's Professional, American Green	The Andersons	31,500	3.6
Pro Care, Eliminator, Lilly Miller, Pennington	Central Garden & Pet	30,350	3.5
Ferti-Lome, Hi-Yield, American	Voluntary Purchasing Group	28,318	3.2
GreenView, Green Gold, Green Power, Turf Master	Lebanon Seaboard	18,942	2.2
Lawn Restore	Woodstream	18,000	2.1
Spectracide	Spectrum Brands	9,150	1.0
Premium Organic Lawn Foods	The Espoma Company	7,960	0.9
All other	-	57,500	6.6
Total-a		873,870	100.0

a- Includes fertilizer-herbicide and fertilizer-insecticide products.

DISTRIBUTION CHANNELS

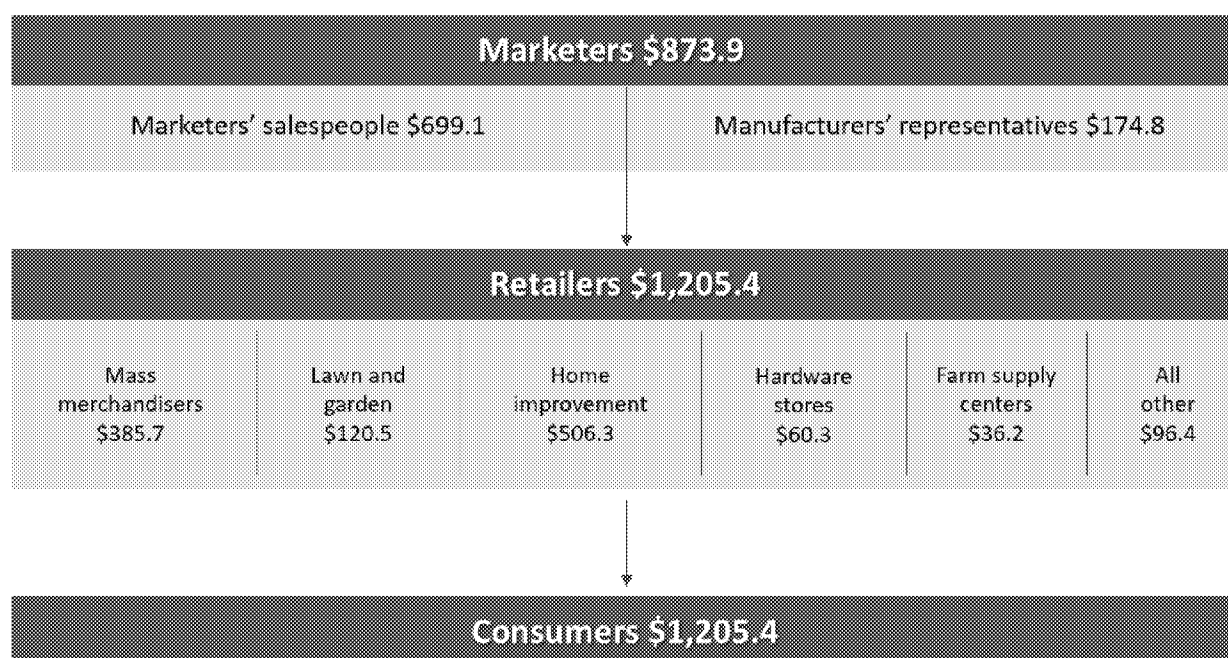
Marketers' own sales representatives are responsible for an estimated 80.0% of sales in 2016. Manufacturers' representatives account for the remainder. Approximately 78.0% of marketers' sales are made directly to retail accounts and 22.0% to distributors.

Home improvement centers are the leading retail outlets for lawn fertilizers, representing about 42.0% of sales. Mass merchandise stores account for 32.0%, followed by lawn and garden centers, hardware stores, and farm supply stores.

The channel data reflects the number of respondents that purchase the product category in each type of outlet. This historical method does not take into account the impact of income differences on channel revenue. To account for that impact, this analysis used the respondents with incomes of more than \$50,000 per year to reflect the higher disposable incomes spent on lawn, garden, and home products, as well as larger lot sizes associated with these higher-income individuals. Both factors would tend to increase their spending per purchase. Kline & Company has not altered the tabulations shown in this section, but has used only the higher-income respondents to calculate distribution channel importance.

Figure 3A-2: Estimated U.S. Distribution of Consumer Lawn Fertilizers, 2016

Millions of marketers' dollars



PROMOTION

Marketing of lawn fertilizers has been characterized in recent years by an enormous diversity of promotional practices. Scotts has invested significantly in consumer advertising through television, magazines, and newspapers, in addition to rebate programs and various forms of trade promotions. In 2016, Scotts spent approximately \$7.0 million to promote its Turf Builder line, and an additional \$475,000 for other lawn fertilizers. Many other suppliers are increasingly using cooperative print advertising programs and more point-of-purchase displays aimed at providing the consumer with information concerning the benefits and proper use of a particular product.

OUTLOOK

Scotts has increased its dominant position in this product category. The concentration of buying power in the hands of mass merchandisers, home improvement centers, and other large buying groups is forcing consolidation or exit of regional brands. With Scotts' market share expanding and the number of major retail buyers shrinking, competition among the regional suppliers has been intense. With Spectrum Brands dropping back in this market, Scotts and other suppliers have taken up the slack and now have more control over the market. Kmart and Walmart have been successful at establishing their own brands as the alternative, using contract packagers from among the regional competitors to do so.

Much of the growth in fertilizers over the past few years has been due to price increases. As the economy continues to strengthen, sales of lawn fertilizers will continue to see stable growth in the future. In addition, organic alternatives are a growing trend in lawn care, providing products that were not available to the homeowner 10 years ago. Organic fertilizers, typically costing more than traditional fertilizers, will aid in growing the consumer fertilizer market. Sales are projected to reach \$964.8 million in 2021, representing an annual increase of 2.0% over 2016 sales of \$873.9 million.

Table 3A-9: Outlook for Lawn Fertilizers to the U.S. Consumer Market, 2016-2021

Year	\$ Million	Average annual growth, %
2016	873.9	-
2021	964.8	2.0

3B. GARDEN FERTILIZERS

Sales in the garden fertilizers segment total \$334.1 million in 2016, representing a \$12.4 million increase from the 2011 level of \$321.7 million and an average annual growth rate of less than 1.0%.

As explained in the chapter on lawn fertilizers, the increasing concentration of retail sales of consumer lawn and garden products in the hands of mass merchandisers, home improvement centers, and other large buying groups has been driving a restructuring and consolidation of suppliers. Since the 2012 edition of this report was published, mergers and acquisitions have continued. Some of these new and changing business relationships affect the garden fertilizer segment.

The following business activity has occurred in this segment in the reporting period:

- In 2016, Scotts Miracle-Gro, through its subsidiary Hawthorne Gardening Company, completes the acquisition of American Agritech, L.L.C., doing business as Botanicare, an Arizona-based leading producer of plant nutrients, plant supplements, and growing systems used for hydroponic gardening, for an estimated purchase price of \$90.0 million.
- The retail group of The Andersons, which currently has four stores in Maumee, Toledo, and Columbus, Ohio, has announced plans to exit the retail business and close its stores by the end of 2017. This is due to pre-tax losses in excess of \$20.0 million in the past eight years in the company's retail segment, despite the fact that it has already closed three stores and invested in others in order to maintain its presence. Due to changing consumer preferences, sales have declined and are expected to decline in the future.
- In 2015, Scotts Miracle-Gro acquired the assets of General Hydroponics and Vermicrop for \$120.0 million and \$15.0 million, respectively. This transaction provides Scotts with an additional entry in the indoor and urban gardening category, which is a part of the company's long-term growth strategy. General Hydroponics and Vermicrop are leading producers of liquid plant food products, growing media, and accessories for hydroponic gardening.
- In 2015, Centre Lane Partners acquired Easy Gardener and later in 2016, Easy Gardener was renamed to The Jobe's Company. Since then, the company has been focused on expanding its market share in natural and organic garden and lawn products.

New product introductions in the reporting period include the following:

- In 2016, Espoma introduces a new line of liquid plant foods. The company's Organic Liquid Plant Foods are proven to grow bigger and better plants. These concentrates are comprised of natural proteins that are enhanced with humic acid, kelp extracts, and a set of beneficiary microbes that yield comprehensive results. The products in this category include Bloom! 1-3-1, Start! 1-2-2, Grow! 2-2-2, and Fish! 2-3-0. Bloom! 1-3-1 stimulates plentiful fruit and promotes flowering. Start! 1-2-2 is a starter plant food that helps in establishing plants faster while growing strong roots. Grow! 2-2-2 is an all-purpose plant food that promotes root growth. Fish! 2-3-0 is a fish fertilizer that boosts growth.
- In its 2012 catalog, Voluntary Purchasing Group (VPG) has introduced a number of new products. Under the ferti-lome brand, VPG has launched Garden Cote fertilizer and HydroStretch soil amendment. Under the Natural Guard brand, VPG has recently launched Blood Meal, Bone Meal, Cottonseed Meal, Evergreen & Holly Food, Plant Food, Rose Food, and Tomato & Vegetable Food.

PRODUCT DESCRIPTION

Garden fertilizers are used on flowers, vegetables, trees, shrubs, and other ornamental plantings. Both all-purpose and specialty fertilizers for popular plants, including roses, azaleas, rhododendrons, tomatoes, and fruit trees, are readily available. In general, garden fertilizers are high in phosphorus and potassium to encourage vigorous root and bloom development. Manure and other organic materials that supply nutrients are popular with gardeners and are included in this product category.

THE MARKET

Marketers' sales

Marketers' sales of garden fertilizers are estimated at \$334.1 million in 2016, a 0.8% annual increase from \$321.7 million in 2011.

Table 3B-1: Sales of Garden Fertilizers to the U.S. Consumer Market, 2001 to 2016

Year-a	\$ Million	Average annual growth, %
2001	262.9	18.3
2003	267.7	0.9
2005	294.9	5.0
2007	296.1	0.2
2009	327.1	5.1
2011	321.7	(0.8)
2016	334.1	0.8

a- This study was not conducted in 2002, 2004, 2006, 2008, 2010, 2012, 2013, 2014, or 2015.

Sales by region

The South accounts for approximately 39.0% of all sales of garden fertilizers in 2016, followed by the Midwest.

Table 3B-2: Sales of Garden Fertilizers to U.S. Consumers, by Region, 2016

Region	\$ Million	% Of total
South	129.0	38.6
Midwest	74.5	22.3
West	67.5	20.2
Northeast	63.1	18.9
Total	334.1	100.0

Retail shipments

Shipments of garden fertilizers to retail outlets are estimated at 144.7 million lb and 1.2 million gal of finished product in 2016.

Product form

Granular products are the leading form of garden fertilizers, accounting for approximately 68.0% of total sales in 2016. Water-soluble and liquid products follow with \$50.4 million and \$48.4 million, respectively.

Table 3B-3: Sales of Garden Fertilizers to U.S. Consumers by Product Form and Volume, 2016

Product form	Million			% Of total		
	Lb	Gal	\$	Weight	Volume	Value
Granular	121.1	-	228.6	83.7	-	68.4
Liquid	-	1.2	48.4	-	100.0	14.5
Water-soluble powder	19.3	-	50.4	13.3	-	15.1
All other-a	4.3	-	6.7	3.0	-	2.0
Total	144.7	1.2	334.1	100.0	100.0	100.0

a- Includes manures and other organic materials, spikes and other materials.

Product type

Straight fertilizers account for approximately 93.0% of sales in 2016. Combination fertilizer-pesticide products account for the remaining 7.0%. Fertilizer-herbicide products such as Preen 'n Green and Miracle-Gro constitute the greatest portion of sales of combination fertilizers.

Table 3B-4: Sales of Garden Fertilizers to U.S. Consumers for Straight and Combined with Pesticides, 2016

Product type	Million			% Of total		
	Lb	Gal	\$	Weight	Volume	Value
Straight-a,b	133.8	1.2	310.7	92.5	100.0	93.0
Combination-c	10.9	-	23.4	7.5	-	7.0
Total	144.7	1.2	334.1	100.0	100.0	100.0

a- Includes primary and secondary nutrients and trace elements.
b- Liquid organic products included under straight fertilizers.
c- Includes fertilizer-herbicide and fertilizer-insecticide products.

Product materials

Potash, nitrogen, and phosphates account for an estimated 19.0% of total poundage for garden fertilizers, including nutrients derived from manures. Most poundage for garden fertilizers represents carrier materials and the non-nutrient portion of manures.

Table 3B-5: Volume of Active Ingredients Used in Garden Fertilizers in the U.S. Consumer Market, 2016

Materials	Million lb	% Of total
Potash	9.8	6.8
Nitrogen	9.4	6.5
Phosphates	7.8	5.4
Other nutrients-a	6.3	4.4
Toxicants-c	0.1	b
All other-c	111.3	76.9
Total	144.7	100.0
a- Includes secondary nutrients and trace elements.		
b- Less than 0.05%.		
c- Primarily trifluralin and dithiopyr used in Preen and Miracle-Gro.		
d- Includes carrier materials and manures.		

Private-label activity

Sales of garden fertilizers manufactured under private labels are estimated at less than 8.0% of the market in 2016.

PRICES AND MARGINS

Retail margins for garden fertilizers tend to be higher than for lawn fertilizers, in part because of the importance of plant-specific formulations in this category and greater product differentiation. Margins at lawn and garden centers typically range from 35.0% to 45.0% for plant-specific fertilizers, and from 25.0% to 30.0% for dehydrated manures.

Table 3B-6: Retail Prices of Selected Consumer Garden Fertilizers in the United States, 2016

Brand	Marketer	Form	Size	Retail price, \$
Holly Tone 4-6-4	Espoma	Granular	4.0 lb	7.90
Jobe's Tomato Fertilizer Spikes 6-18-6	The Jobe's Company	Spikes	18 pack	3.99
Lilly Miller Bulb and Bloom 4-10-10	Central Garden and Pet	Granular	4.0 lb	5.49
Miracle-Gro Water Soluble All Purpose Plant Food	Scotts	Water-soluble	5.0 lb	9.98
Miracle-Gro Evergreen Fertilizer Spikes	Scotts	Spikes	12 pack	8.98
Miracle-Gro LiqueFeed All Purpose Plant Food Refills	Scotts	Liquid	4 pack	10.98
Miracle-Gro Shake 'n Feed All Purpose 10-10-10	Scotts	Granular	4.5 lb	15.98
Osmocote Flower and Vegetable Plant Food 14-14-14	Scotts	Granular	1.0 lb	4.75
Osmocote Outdoor and Indoor Plant Food 19-6-12	Scotts	Granular	1.25 lb	4.89
Preen Weed Preventer with Brilliant Blooms 9-17-9	Lebanon Seaboard	Granular	5.625 lb	22.75
Scotts All Purpose Flower and Vegetable Continuous Release Plant Food 10-10-10	Scotts	Granular	3.0 lb	5.38
Scotts Slow Release Bulb Food 10-12-10	Scotts	Granular	3.0 lb	4.69
Vigoro All Purpose Plant Food	Spectrum Brands	Liquid	5.0 lb	8.67

PACKAGING

Granular garden fertilizers are packaged in paperboard boxes, plastic bottles, canisters with shaker tops, multi-walled paper bags, and polyethylene bags. Manures and other solid organic fertilizers are packaged in polyethylene and paper bags. Paperboard boxes ranging in size from 2 lb to 30 lb and multi-walled paper bags ranging from 5 lb to 50 lb are most commonly used for solid plant-specific fertilizers. Liquid products of all kinds are typically packaged in plastic bottles from 8 oz up to 1/2 gal in size, and spikes are usually presented in blister packs or sealed boxes.

Water-soluble products are typically packaged in paperboard boxes with an inner plastic bag or liner or in small plastic tubs. Hose-end garden fertilizers are sold with and without plastic hose-end spray applicators. Scotts also sells some products in 5 lb or 10 lb plastic pails with the contents packaged in pre-measured packets designed for use with the company's hose-end applicator. The total weight of the products remains the same.

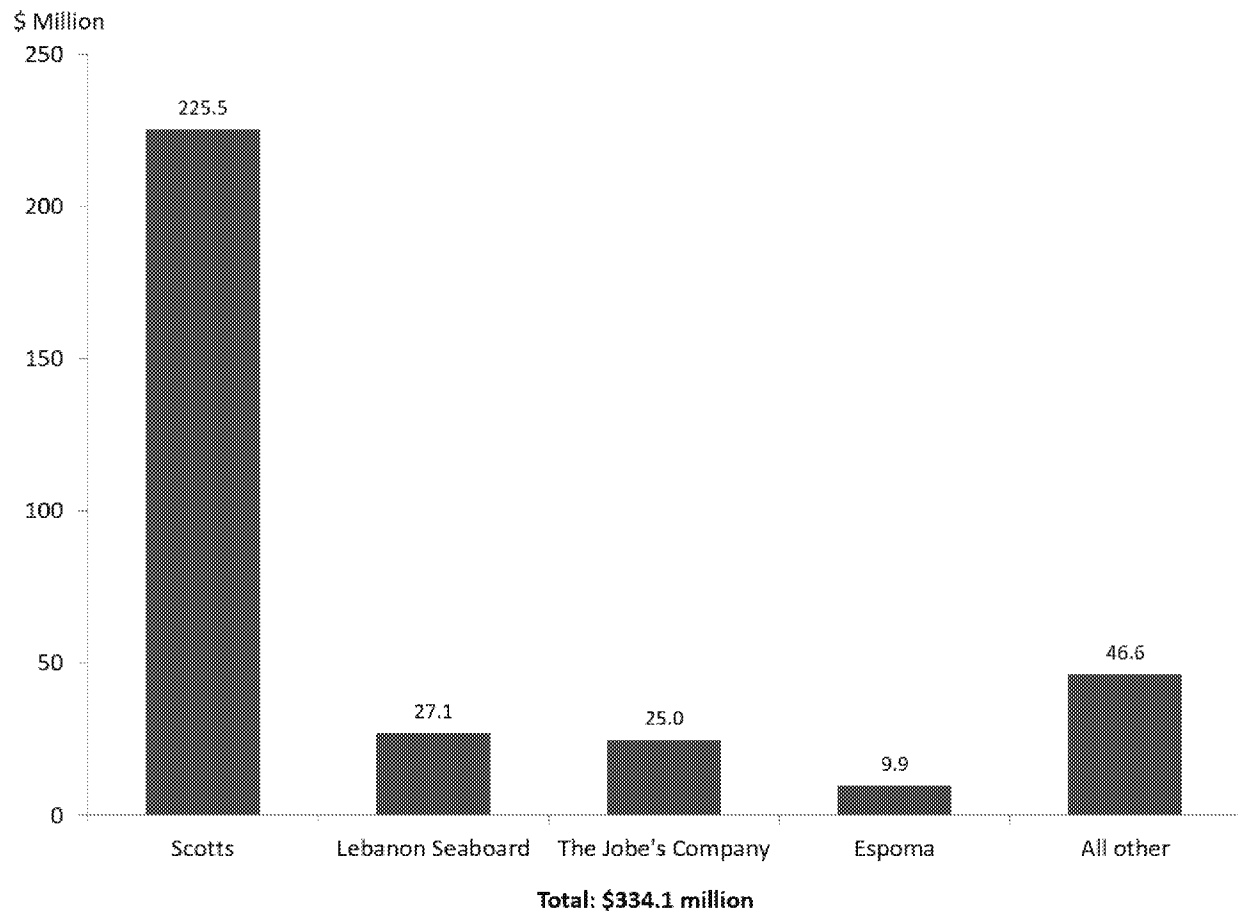
COMPETITION

With the benefit of the acquisition of Stern's Miracle-Gro and Ortho brand products from Monsanto, Scotts continues to maintain its lead position in 2016 as the dominant supplier of consumer garden fertilizers, now accounting for nearly 68.0% of total category sales. Lebanon Seaboard, through its Preen fertilizer product line, ranks a distant second with approximately 8.0% of the market. The Jobe's Company ranks third with 7.5%, followed by Good Earth Horticulture with 3.3%.

After these companies, the market for garden fertilizers is fragmented and features a multitude of smaller suppliers, some of which are quite specialized.

Table 3B-7: U.S. Sales of Consumer Garden Fertilizers by Major Marketer, 2016

Brand	Company	\$ Thousand	% Of total
Scotts, Hyponex, Osmocote, Miracle-Gro, Organic Choice	Scotts	225,493	67.5
GreenView, Green Gold Certified, Preen 'n Green	Lebanon Seaboard	27,060	8.1
Jobe's, Easy Gardener, Ross	The Jobe's Company	25,000	7.5
Hoffman	Good Earth Horticulture	10,900	3.3
Espoma, Tone, Earth-Tone	Espoma	9,940	3.0
Concern, Safer	Woodstream	7,000	2.1
ferti-lome	Voluntary Purchasing Group	4,720	1.4
Schultz, Vigoro	Spectrum Brands	4,575	1.4
Fortify	The Andersons	4,200	1.3
Pennington, Lilly Miller	Central Garden & Pet	3,250	1.0
Bonide	Bonide	2,000	0.6
All other	-	10,000	3.0
Total		334,138	100.0

Figure 3B-1: U.S. Sales of Consumer Garden Fertilizers by Major Marketer, 2016

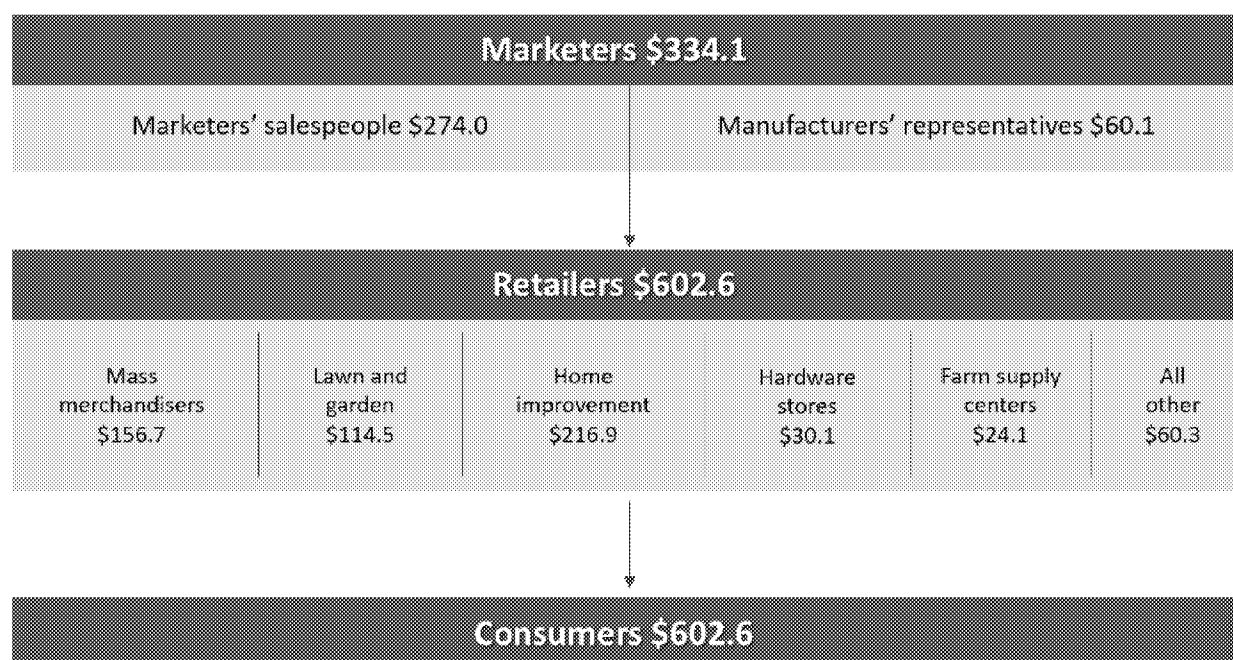
DISTRIBUTION CHANNELS

Marketers' own sales representatives are responsible for approximately 82.0% of garden fertilizer sales. Manufacturers' representatives account for the remaining 18.0%.

Home improvement centers account for 36.0% of sales of garden fertilizers in 2016, followed by mass-merchandising stores with about 26.0% of sales. Other significant retail outlets include lawn and garden centers, farm supply stores, and hardware stores.

Figure 3B-2: Estimated U.S. Distribution of Consumer Garden Fertilizers, 2016

Millions of marketers' dollars



The channel data reflects the number of respondents that purchase the product category in each type of outlet. This historical method does not take into account the impact of income differences on channel revenue. To account for that impact, this analysis used the respondents with incomes of more than \$50,000 per year to reflect the higher disposable incomes spent on lawn, garden, and home products, as well as larger lot sizes associated with these higher-income individuals. Both factors would tend to increase their spending per purchase. Kline & Company has not altered the tabulations shown in this section, but has used only the higher-income respondents to calculate distribution channel importance.

PROMOTION

Scotts, the leading supplier in this product category, continues to spend extensively on advertising to promote the Miracle-Gro brand, with nearly \$11.0 million spent in 2016. The company firmly believes in creating consumer demand for its products through high visibility direct advertising, a strategy that is unusual in the lawn and garden industry but has proven quite successful. Scotts also relies on professional recommendations, print advertisements in consumer magazines and newspapers, and in-store merchandising.

Lebanon Seaboard spends approximately \$1.2 million in 2016 to promote its Preen brand. Several other major marketers do not specifically promote their garden products through advertising, and many smaller suppliers do no advertising to consumers at all, relying on trade promotions instead.

OUTLOOK

Over the long term, the continued growth in sales of garden fertilizers has been due in part to the ability of Scotts and other manufacturers to attract new consumers to new formulations and packages such as hose-end products, water-soluble products, and the growing specialty organic fertilizers segment. Water-soluble fertilizers will continue to be the most popular form due primarily to their convenience and effective marketing.

The market for garden fertilizers has become more concentrated, with a higher proportion of sales attributable to fewer suppliers, but it will continue to support a number of specialty and regional brands, especially for the more generic manures. Total sales of garden fertilizers are projected to reach \$368.9 million in 2021, an annual increase of 2.0%.

Table 3B-8: Outlook for Garden Fertilizers in the U.S. Consumer Market, 2016-2021

Year	\$ Million	Average annual growth, %
2016	334.1	-
2021	368.9	2.0

3C. HOUSEPLANT FERTILIZERS

Sales of houseplant fertilizers total \$67.4 million in 2016, an annual increase of 1.4% from sales of \$62.8 million in 2011.

Since the last edition of this report was published, the following business activity has affected the houseplant fertilizers segment:

- The retail group of The Andersons, which currently has four stores in Maumee, Toledo, and Columbus, Ohio, has announced plans to exit the retail business and close its stores by the end of 2017. This is due to pre-tax losses in excess of \$20.0 million in the past eight years in the company's retail segment, despite the fact that it has already closed three stores and invested in others in order to maintain its presence. Due to changing consumer preferences, sales have declined and are expected to decline in the future.
- In 2015, Scotts Miracle-Gro acquired the assets of General Hydroponics and Vermicrop for \$120.0 million and \$15.0 million, respectively. This transaction provides Scotts with an additional entry in the indoor and urban gardening category, which is a part of the company's long-term growth strategy. General Hydroponics and Vermicrop are leading producers of liquid plant food products, growing media, and accessories for hydroponic gardening.
- In 2015, Centre Lane Partners acquired Easy Gardener and later in 2016, Easy Gardener was renamed to The Jobe's Company. Since then, the company has been focused on expanding its market share in natural and organic garden and lawn products.

The introduction of new products in the houseplant fertilizers segment has slowed. No new products of significance have been added since 2011.

PRODUCT DESCRIPTION

Houseplant fertilizers are used on potted plants, which are grown indoors for the most part. Though similar to lawn and garden fertilizer blends, houseplant fertilizers typically provide nitrogen, phosphorus, and potassium—the three basic elements in fertilizers—in lower concentrations or in time-release formulations. They also often provide several trace elements beneficial to plant health. In addition to fertilizer blends, organic fertilizers based on fish, seaweed, and other materials are available. Plant-growth stimulants and similar products are also included in this category, although these are not legally defined as fertilizers. All-purpose products are the most popular, but specialty fertilizers for use on African violets, cacti, orchids, gardenias, and other plants are also widely sold. Houseplant fertilizers are also referred to as plant foods.

THE MARKET

Marketers' sales

Marketers' sales of houseplant fertilizers total \$67.4 million in 2016, an annual increase of 1.4% from sales of \$62.8 million in 2011.

Table 3C-1: Sales of Houseplant Fertilizers in the U.S. Consumer Market, 2001-2016

Year-a	\$ Million	Average annual growth, %
2001	47.7	2.3
2003	46.0	(1.8)
2005	51.5	5.8
2007	51.2	(0.3)
2009	66.9	14.3
2011	62.8	(3.1)
2016	67.4	1.4

a- This study was not conducted in 2002, 2004, 2006, 2008, 2010, 2012, 2013, 2014, or 2015.

Sales by region

The South and Midwest account for more than 60.0% of the sales of houseplant fertilizers in 2016.

Table 3C-2: Sales of Houseplant Fertilizers in the U.S. Consumer Market by Region, 2016

Region	\$ Million	% Of total
South	27.1	40.2
Midwest	14.3	21.2
Northeast	13.3	19.7
West	12.7	18.9
Total	67.4	100.0

Retail shipments

Shipments of houseplant fertilizers are estimated at 19.8 million lb and 500,000 gal of finished product in 2016.

Product form

Houseplant fertilizers are available in a variety of forms, including liquid concentrates and liquid ready-to-use (RTU) mixes, granules, powders, water-soluble solids, time-release capsules, and spikes. The popularity of product form varies based on marketing and promotional support by the manufacturer. Sales of fertilizer spikes, which were once the product of choice, declined several years ago but have since rebounded a bit, partly due to renewed interest in spike products among some manufacturers. Water soluble and liquid products are the two leading product forms in 2016, followed by spikes, and granules.

Table 3C-3: Sales of Houseplant Fertilizers in the U.S. Consumer Market by Product Form, 2016

Product form	Million			% Of total		
	Lb	Gal	\$	Weight	Volume	Value
Liquid	-	0.5	24.4	-	100.0	36.2
Granular and other solids	6.6	-	8.4	33.3	-	12.4
Spike	0.8	-	12.3	4.1	-	18.2
Water-soluble powder	12.4	-	22.3	62.6	-	33.2
Total	19.8	0.5	67.4	100.0	100.0	100.0

Product type

Virtually all houseplant fertilizer products are straight fertilizers. Fertilizer-insecticide combination products are not currently a factor in this segment.

Product materials

Primary nutrients account for about 37.0% of the total weight for houseplant fertilizers.

Table 3C-4: Volume of Active Ingredients for Houseplant Fertilizers in the U.S. Consumer Market, 2016

Materials	Million lb	% Of total
Nitrogen	4.1	17.2
Potash	2.0	8.4
Phosphates	2.7	11.3
Other nutrients	0.2	0.8
All other-a	14.8	62.2
Total	23.8	100.0
a- Includes carrier materials and inert ingredients.		

Private-label activity

Private-label houseplant fertilizers account for an estimated 10.0% of marketers' sales in this product category. Kmart, which does not manufacture any of its consumer pesticides and fertilizers, is the largest marketer of private-label houseplant fertilizers. Contract production represents roughly one-third of total sales.

PRICES AND MARGINS

Retail margins for houseplant fertilizers normally average between 30.0% and 40.0% at most retail outlets. Nevertheless, prices for individual products can vary significantly from store to store depending on the type of retail outlet.

Table 3C-5: Retail Prices of Selected Consumer Houseplant Fertilizers in the United States, 2016

Brand	Marketer	Form	Size	Retail price, \$
Jobe's Houseplant Food Spikes 13-4-5	The Jobe's Company	Spike	50 spikes	1.97
Miracle-Gro All Purpose Plant Food	Scotts	Water-soluble	8.0 oz	3.98
Miracle-Gro Indoor Plant Spikes	Scotts	Spikes	48 spikes	1.97
Espoma Organic African Violet Food	Espoma	Liquid	8.0 fl oz	5.96
Osmocote Outdoor and Indoor Plant Food 19-6-12	Scotts	Granular	1.25 lb	5.25
Schultz African Violet Plus Liquid Plant Food 8-14-9	Spectrum Brands	Liquid	4.0 fl oz	3.54

PACKAGING

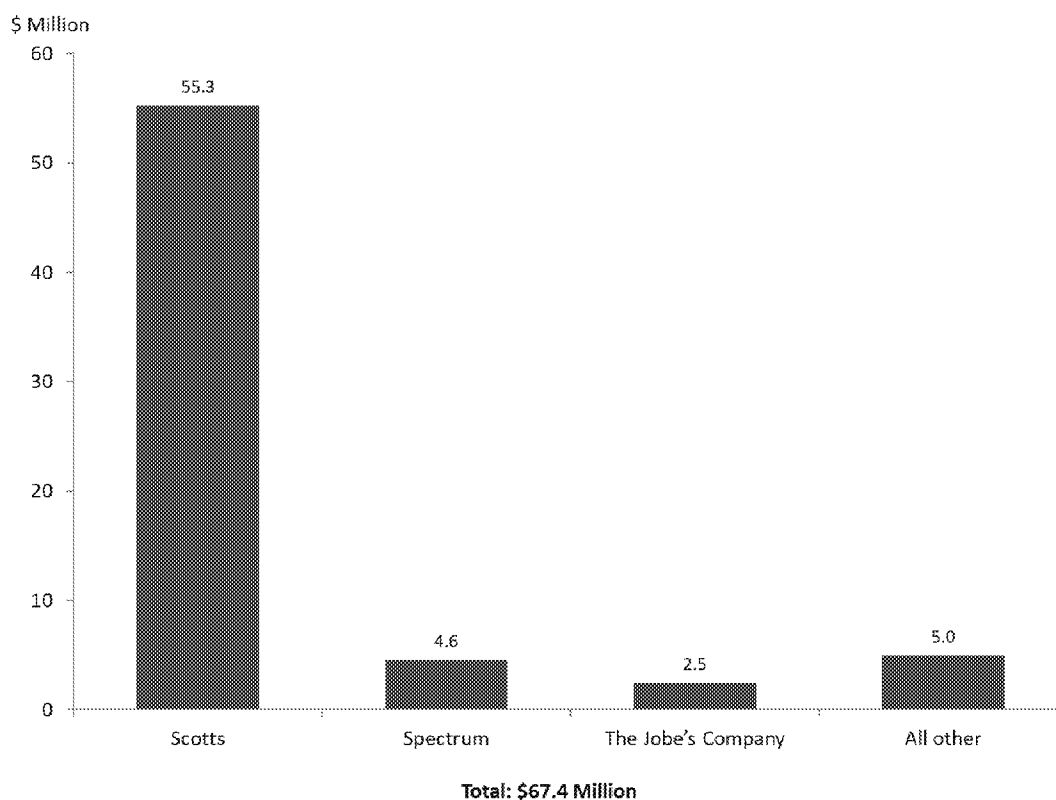
Fertilizer spikes are sold in blister packs ranging in size from 0.5 oz to 4.5 oz, depending on the size of the pot they are intended for and the length of time the spikes last. Liquid fertilizers are sold in plastic bottles ranging from 4 oz to 32 oz. Liquid concentrates are often packaged in bottles with an eyedropper top or other applicator or measuring device. Water-soluble powders and granules are packaged in paperboard boxes with polyethylene liners or plastic inner containers (usually small tubs with fitted lids). A small measuring spoon or scoop is often included. Time-release capsules and related products are usually packaged in plastic bottles ranging in size from 8 oz to 4 lb.

COMPETITION

Scotts has further maintained its position in 2016 as the leading supplier of consumer houseplant fertilizers, now accounting for 82.0% of total category sales. The remainder of the market consists of smaller suppliers.

Table 3C-6: Sales of Houseplant Fertilizers to the U.S. Consumer Market by Marketer, 2016

Brand	Company	\$ Thousand	% Of total
Scotts, Osmocote, Miracle-Gro	Scotts	55,253	82.0
Schultz	Spectrum Brands	4,575	6.8
Jobe's	The Jobe's Company	2,500	3.7
All other-a	-	5,050	7.5
Total		67,378	100.0
a- Includes Lilly Miller, Good Earth Horticulture, and other brands.			

Figure 3C-1: U.S. Sales of Consumer Houseplant Fertilizers by Major Marketer, 2016

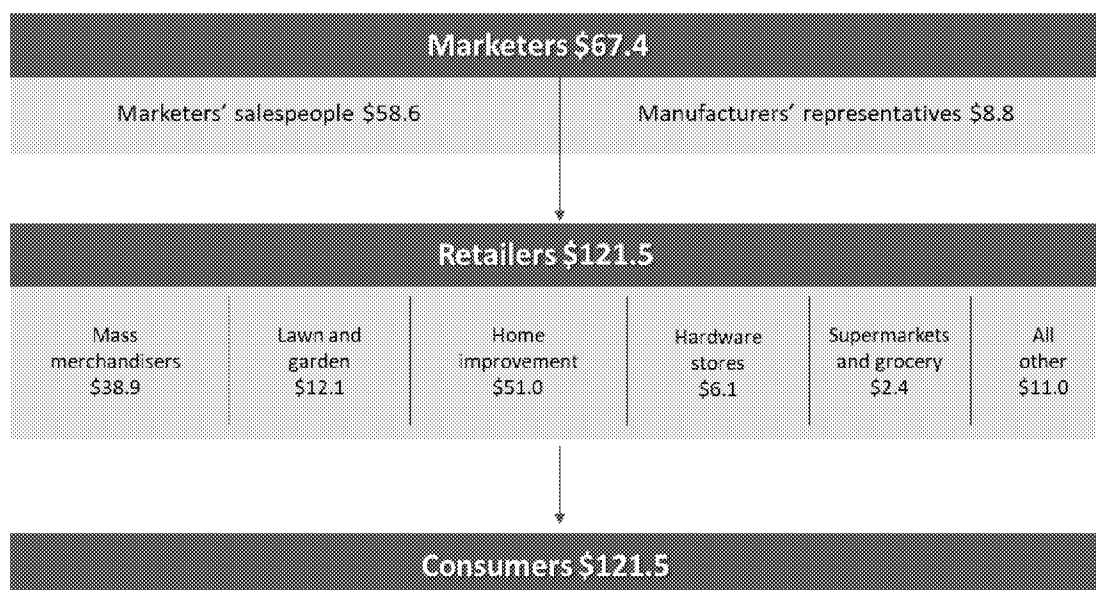
DISTRIBUTION CHANNELS

More than 86.0% of marketers' sales are made by company sales representatives in 2016. Approximately 82.0% of sales of consumer houseplant fertilizers are made directly to retail outlets, with about 18.0% going through distributors.

Home improvement centers are the leading retail outlets for houseplant fertilizers, accounting for approximately 42.0% of total sales. Mass merchandise stores follow with approximately 32.0% of sales.

Figure 3C-2: Estimated U.S. Distribution of Consumer Houseplant Fertilizers, 2016

Millions of marketers' dollars



The channel data reflects the number of respondents that purchase the product category in each type of outlet. This historical method does not take into account the impact of income differences on channel revenue. To account for that impact, this analysis used the respondents with incomes of more than \$50,000 per year to reflect the higher disposable incomes spent on lawn, garden, and home products, as well as larger lot sizes associated with these higher-income individuals. Both factors would tend to increase their spending per purchase. Kline & Company has not altered the tabulations shown in this section, but has used only the higher-income respondents to calculate distribution channel importance.

PROMOTION

Advertising of houseplant fertilizers to consumers tends to be either subordinated within advertising for a larger line of products or limited.

OUTLOOK

Interest in houseplants among consumers has been stable with most growth over the past few years coming from price increases. As inexpensive plants have become widely available in supermarkets and mass-merchandise outlets, many consumers have come to view houseplants as disposable items, a trend that lack of plant-care knowledge has inadvertently reinforced.

Total sales of houseplant fertilizers over the next five years are expected to show small but continued growth, primarily through price increases and promotion from the leading suppliers. The number of consumers using these products may not increase significantly, and gains in market share will mostly come at the expense of other suppliers, with manufacturers of liquid and spike products likely to continue to do best. Total sales of houseplant fertilizers are projected to increase by 1.0% per year.

Table 3C-7: Outlook for Houseplant Fertilizers for the U.S. Consumer Market, 2016-2021

Year	\$ Million	Average annual growth, %
2016	67.4	-
2021	70.8	1.0

4. HERBICIDES

COVERAGE

This section covers the following products:

- 4A. Lawn Herbicides
- 4B. Garden and Nonselective Herbicides

Fertilizer-herbicide combination products are covered in the fertilizers chapter of this report.

THE MARKET

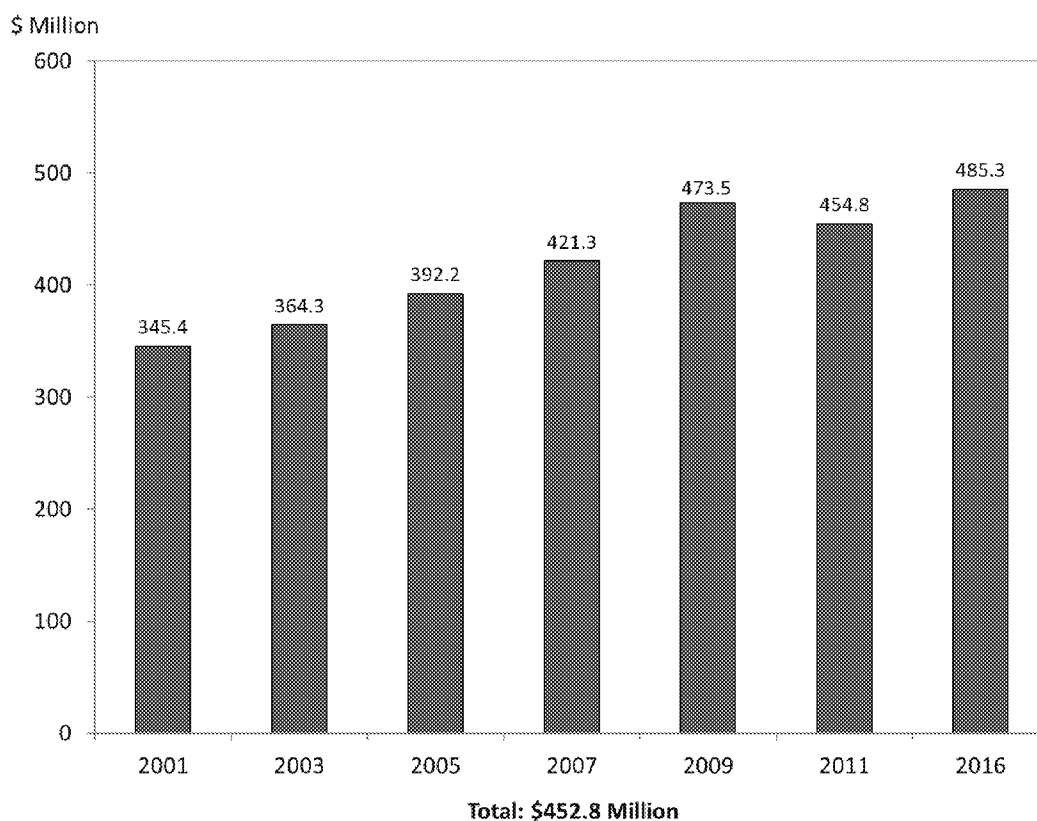
Marketers' sales

The market for consumer herbicides increases by 1.4% annually from 2011 sales of \$452.8 million to an estimated \$485.3 million at the marketers' level in 2016.

Table 4-1: Sales of Herbicides to the U.S. Consumer Market, 2001-2016

Year-a	\$ Million	Average annual growth, %
2001	345.4	6.3
2003	364.3	2.7
2005	392.2	3.8
2007	421.3	3.6
2009	473.5	6.0
2011	452.8	(2.2)
2016	485.3	1.4

a- This study was not conducted in 2002, 2004, 2006, 2008, 2010, 2012, 2013, 2014, or 2015.

Figure 4-1: Total Herbicide Category Sales, 2001 to 2016

Sales by region

The South is the largest-consuming region for herbicide sales, with approximately 40.0% in 2016, followed by the Midwest with 25.2%.

Table 4-2: Sales of Herbicides to the U.S. Consumer Market by Region, 2016

Region	\$ Million	% Of total
South	192.6	39.7
Midwest	122.2	25.2
Northeast	91.4	18.8
West	79.1	16.3
Total	485.3	100.0

Retail shipments

Shipments of consumer herbicides are estimated at 70.1 million lb and 36.5 million gal of formulated product in 2016.

Product form

Liquid products account for approximately 87.0% of total sales in 2016.

Table 4-3: Sales of Herbicides to the U.S. Consumer Market by Product Form, 2016

Product form	Million		\$	% Of total value
	Lb	Gal		
Liquid	-	36.5	419.7	86.5
Solid-a	70.1	-	65.6	13.5
Total	70.1	36.5	485.3	100.0

a- Includes wettable powders.

Product type

Nonselective herbicides account for approximately 52.0% of total sales, while lawn and garden herbicides account for approximately 48.0%.

Table 4-4: Sales of Herbicides to the U.S. Consumer Market by Market Segment, 2016

Application	\$ Million	% Of total
Nonselective	251.9	51.9
Lawn	168.1	34.6
Garden	65.3	13.5
Total	485.3	100.0

Active ingredients

Glyphosate constitutes approximately 44.0% of the total active ingredient weight in consumer herbicides in 2016. The remaining weight is divided among several active ingredients.

Table 4-5: Volume of Active Ingredients Use in Herbicides in the U.S. Consumer Market, 2016

Active ingredient	Million lb	% Of total
Glyphosate	5.0	43.9
2,4-D	2.1	18.4
Pelargonic acid	0.7	6.1
MCPA	0.6	5.3
Trifluralin	0.5	4.4
MCPP	0.3	2.6
Dicamba	0.2	1.7
Quinclorac	0.1	0.9
Diquat	0.1	0.9
Pendimethalin	0.1	0.9
Diflufenzopyr	0.1	0.9
All other-a	1.6	14.0
Total	11.4	100.0

a- Includes benefin, dithiopyr, imazapic, and atrazine, among other ingredients.

An additional 12.4 million lb of active ingredient is reported in the fertilizer section as herbicide-fertilizer combinations.

ACQUISITIONS, DIVESTITURES, AND NEW PRODUCTS

The following business development activity has occurred in this segment in the reporting period:

- In early 2017, PBI-Gordon enters into a partnership with Kumiai Chemical Industry Co. Ltd. and Ihara Chemical Industry Co. Ltd., Japan, to develop herbicides containing a new pyrimisulfan active ingredient. The product is marketed under the brand name Vexis. The active ingredient is formulated to be used in cool and warm season turf grass species on residential and commercial sites, as well as sports facilities.
- In 2016, SBM acquires Bayer Garden and Bayer Advanced businesses in both Europe and North America, and it has created a separate business unit named SBM Life Science to manage the consumer pesticide market. SBM Life Science has its headquarters in France and provides plant protection and home and garden care products.
- The Andersons announced plans to exit the retail business and close its stores by the end of 2017 due to pre-tax losses in excess of \$20.0 million in the past eight years. Even though the company has closed three stores and invested in other stores in order to maintain the retail segment, sales have continued to decline and are expected to decline in the future due to changing consumer preferences.

New product introductions in this segment include the following:

- In 2015, PBI-Gordon launched Avenue South, a turf herbicide based on four active ingredients to deliver rapid control of more than 90 listed broadleaf weeds, including doveweed, Virginia buttonweed, chamberbitter, and dollar weed.
- In 2014, Bonide acquired the BurnOut line of natural weed killers from St. Gabriel Laboratories. BurnOut works extremely quickly to control weeds with a combination of natural ingredients including acetic acid and clove oil.
- In its 2012 catalog, VPG has introduced a number of new products. The company's most recent launches under the Hi-Yield brand are Nutsedge Control and Ornamental Weed Preventer. Under the Natural Guard brand, VPG has recently launched Organic Spot Weeder.

COMPETITION

The Scotts Miracle-Gro Company, the largest supplier of consumer herbicides, accounts for 51.6% of the total market in 2016. Spectrum Brands ranks a distant second with 14.1%, followed by Lebanon Seaboard with 9.1%.

DISTRIBUTION CHANNELS

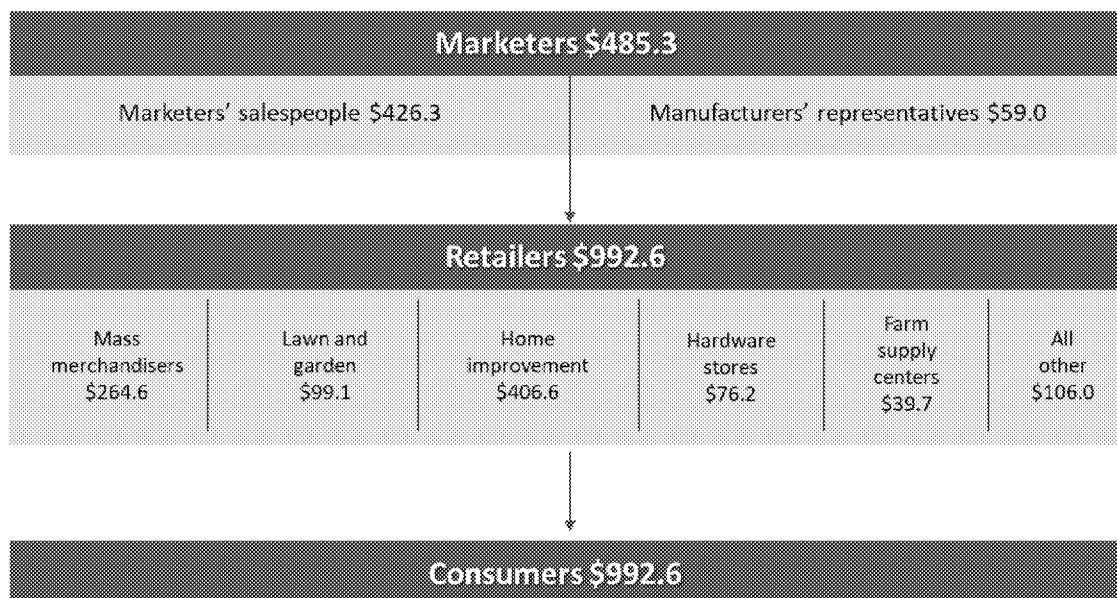
Approximately 88.0% of sales are made by marketers' own sales representatives and 12.0% by manufacturers' representatives.

Table 4-6: U.S. Sales of Consumer Herbicides by Major Marketer, 2016

Company	\$ Thousand	% Of total
The Scotts Miracle-Gro Company	250,641	51.6
Spectrum Brands	68,625	14.1
Lebanon Seaboard Corp.	44,200	9.1
PBI-Gordon	28,100	5.8
Central Garden & Pet	25,700	5.3
SBM	16,250	3.3
Voluntary Purchasing Groups	9,964	2.1
Bonide Products	8,000	1.6
The Andersons	4,500	0.9
Control Solutions	3,700	0.8
Monterey Lawn & Garden	3,000	0.6
Southern Agricultural	2,500	0.5
St. Gabriel Organics	600	0.1
Zep, Inc.	525	0.1
All other	19,000	3.9
Total	485,305	100.0

Figure 4-2: Estimated U.S. Distribution of Consumer Lawn, Garden, and Nonselective Herbicides, 2016

Millions of marketers' dollars



The channel data reflects the number of respondents that purchase the product category in each type of outlet. This historical method does not take into account the impact of income differences on channel revenue. To account for that impact, this analysis used the respondents with incomes of more than \$50,000 per year to reflect the higher disposable incomes spent on lawn, garden, and home products, as well as larger lot sizes associated with these higher-income individuals. Both factors would tend to increase their spending per purchase. Kline & Company has not altered the tabulations shown in this section, but has used only the higher-income respondents to calculate distribution channel importance.

Home improvement centers and mass merchandise stores are the leading retail outlets for herbicides, accounting for 41.0% and 27.0% of sales, respectively.

Table 4-7: Sales of Herbicides to the U.S. Consumer Market by Retail Outlet Type, 2016

Retail outlet	\$ Million	% Of total
Home improvement centers	406.6	41.0
Mass merchandise stores	264.6	27.0
Lawn and garden centers-a	99.1	10.0
Hardware stores	76.2	8.0
Farm supply stores	39.7	4.0
All other-b	106.0	11.0
Total	992.2	100.0
a- Includes retail nurseries.		
b- Includes supermarkets and grocery stores, warehouse clubs, mail order sales, and other retail outlets.		

OUTLOOK

Sales of herbicides will continue to increase at a moderate rate. Consumer concern about the use of pesticides, the convenience of combination fertilizer-herbicide products, and the increasingly popular practice of spot-treating weeds in turf may have a limiting impact on this segment. Total sales are projected to reach \$522.8 million in 2021, an annual increase of approximately 1.5%.

Table 4-8: Outlook for Herbicides to the U.S. Consumer Market, 2016-2021

Year	\$ Million	Average annual growth, %
2016	485.3	-
2021	522.8	1.5

4A. LAWN HERBICIDES

Marketers' sales of lawn herbicides are estimated at \$168.1 million in 2016, an annualized increase of 0.9% from sales of \$160.6 million in 2011.

The following business development activity has occurred in this segment in the reporting period:

- In early 2017, PBI-Gordon enters into a partnership with Kumiai Chemical Industry Co. Ltd. and Ihara Chemical Industry Co. Ltd., Japan, to develop herbicides containing a new pyrimisulfan active ingredient. The product is marketed under the brand name Vexis. The active ingredient is formulated to be used in cool and warm season turf grass species on residential and commercial sites, as well as sports facilities.
- In 2016, SBM acquires Bayer Garden and Bayer Advanced businesses in both Europe and North America, and it has created a separate business unit named SBM Life Science to manage the consumer pesticide market. SBM Life Science has its headquarters in France and provides plant protection and home and garden care products.
- The Andersons announce plans to exit the retail business and close its stores by the end of 2017 due to pre-tax losses in excess of \$20.0 million in the past eight years. Even though the company has closed three stores and invested in other stores in order to maintain the retail segment, sales have continued to decline and are expected to decline in the future due to changes in consumer preferences.
- In 2012, Valent announced an agreement with The Scotts Miracle-Gro Company wherein Scotts acquired certain assets of the Green Light Company, including trademarks for the Green Light brands Amaze, Super Bloom, Rose Defense, Conquest Insecticide Concentrate and Yard Safe Insect Repellent, among others.
- In early 2012, Howard Johnson's Enterprises, a Missouri-based manufacturer, marketer, and innovator of lawn and garden products for consumer and professional use, was acquired by Central Garden & Pet.

New product introductions in this segment include the following:

- In its 2012 catalogue, VPG introduced Nutsedge Control and Ornamental Weed Preventer under the Hi-Yield brand. Under the Natural Guard brand, VPG has recently launched Organic Spot Weeder.
- In 2015, PBI-Gordon launched Avenue South, a turf herbicide based on four active ingredients to deliver rapid control of more than 90 listed broadleaf weeds, including doveweed, Virginia buttonweed, chamberbitter, and dollar weed.

PRODUCT DESCRIPTION

Lawn herbicides are used to kill crabgrass and dandelions and other broadleaf weeds in turf. Preemergence products act on seedlings and prevent weeds from developing. Postemergence products kill weeds after they appear. The vast majority of herbicides marketed for consumer use are postemergence products. Herbicides are available as ready-to-use (RTU) and concentrated liquids, granules, and wettable powders.

THE MARKET

Marketers' sales

Marketers' sales of lawn herbicides are estimated at \$168.1 million in 2016, an annualized increase of 0.9% from 2011 sales of \$160.6 million.

Table 4A-1: Sales of Lawn Herbicides to the U.S. Consumer Market, 2001-2016

Year-a	\$ Million	Average annual growth, %
2001	97.0	12.1
2003	98.6	0.8
2005	112.8	7.0
2007	135.6	10.0
2009	152.4	6.0
2011	160.6	2.7
2016	168.1	0.9

a- This study was not conducted in 2002, 2004, 2006, 2008, 2010, 2012, 2013, 2014, or 2015.

Sales by region

The South accounts for the largest percentage of lawn herbicide sales, followed by the Midwest.

Table 4A-2: Sales of Lawn Herbicides to the U.S. Consumer Market by Region, 2016

Region	\$ Million	% Of total
South	67.6	40.2
Midwest	41.9	24.9
West	28.7	17.1
Northeast	29.9	17.8
Total	168.1	100.0

Retail shipments

Retail shipments of lawn herbicides are estimated at 32.9 million lb and 6.9 million gal of formulated product in 2016.

Product form

Liquids are the most popular form of lawn herbicides, accounting for approximately 90.0% of sales in 2016. Granular products rank second with 9.0%.

Table 4A-3: Sales of Lawn Herbicides to the U.S. Consumer Market by Product Form, 2016

Product form	Million			% Of total		
	Lb	Gal	\$	Weight	Volume	Value
Liquid	-	6.7	151.2	-	100	90.0
Granular	32.5	-	15.3	99	-	9.0
All other-a	0.4	-	1.6	1	-	-
Total	32.9	6.9	168.1	100	100	100.0
a- Includes dusts and wettable powders.						

Active ingredients

2,4-D, MCPA, and MCPP are the most widely used active ingredients in consumer lawn herbicides, mostly in combination with other actives. Triclopyr and dicamba are also important, with dicamba particularly unique in its popularity in three-way and four-way mixes with other active ingredient materials mentioned.

Table 4A-4: Volume of Active Ingredients Used in Lawn Herbicides in the U.S. Consumer Market, 2016

Active ingredients	Thousand lb	% Of total
2,4-D	1,978	43.2
MCPA	645	14.1
MCPP	289	6.3
Fenoxaprop	185	4.0
Dicamba	157	3.4
Quinclorac	113	2.5
Pendimethalin	92	2.0
Diflufenzopyr	55	1.2
Dithiopyr	48	1.0
Triclopyr	41	0.9
All other-a	974	21.3
Total	4,577	100.0
a- Includes atrazine, sulfentrazone, carfentrazone, dithiopyr, isoxaben, and pendimethalin, among others.		
See Chapter 3A for additional active ingredients combined with fertilizer.		

Private-label activity

Private-label and contract package manufacturing account for approximately 20.0% of total sales. Kmart and Walmart are the largest marketers of products manufactured by others.

PRICES AND MARGINS

Retail margins on lawn herbicides typically average 40.0%, although mass merchandise stores and home improvement centers promote these products at lower margins during seasonal sales events.

Table 4A-5: Retail Prices of Selected Consumer Lawn Herbicides in the United States, 2016

Brand	Marketer	Form	Size	Retail price, \$
Bayer Advanced Ready-to-Spray Season Long Weed Control for Lawn	SBM	Liquid	24 oz	14.97
Ortho Weed B Gon MAX Concentrate Plus Crabgrass Control	Scotts	Liquid	32 oz	8.64
Scotts Halts Crabgrass Preventer	Scotts	Granular	10 lb	16.97
Ortho Weed B Gon MAX + Crabgrass Control RTU	Scotts	Liquid	1.33 gal	19.99
Ortho Weed B Gon MAX Weed Killer for Lawns Concentrate	Scotts	Liquid	32 fl oz	9.47
Bayer Advanced Lawn All-in-One Weed & Crabgrass Killer Ready to Spray	SBM	Liquid	32 fl oz	18.81
Preen Lawn Broadleaf Weed Control	Lebanon Seaboard	Granular	10.00 lb	21.85
Spectracide Weed Stop for Lawns Ready to Spray	Spectrum Brands	Liquid	32 fl oz	7.97
Image Herbicide Concentrate	Central Garden & Pet	Liquid	24 fl oz	17.97
Trimec Lawn Weed Killer RTS	PBI-Gordon	Liquid	32 fl oz	15.31
SpeedZone Lawn Weed Killer	PBI-Gordon	Liquid	20 oz	37.69
Monterey Remuda Full Strength Herbicide	Monterey Lawn and Garden	Liquid	32 fl oz	19.15

PACKAGING

Granular herbicides are generally sold in polyethylene (PE) bags or paper bags with PE liners. Liquid concentrates are packaged in containers made of plastic, glass, and occasionally metal, ranging in size from 8 fl oz to 128 fl oz. Liquid RTU products are generally packaged in plastic bottles with pump-spray tops or hose-end attachments. Aerosols are packaged in metal canisters.

COMPETITION

Scotts and Ortho products account for approximately 44.0% of the consumer lawn herbicide market in 2016. Spectrum Brands ranks a distant second with 13.6% of total sales, followed by PBI-Gordon with 12.3%. The rest of the market is split among a number of smaller suppliers.

Figure 4A-1: U.S. Sales of Consumer Lawn Herbicides by Major Marketer, 2016

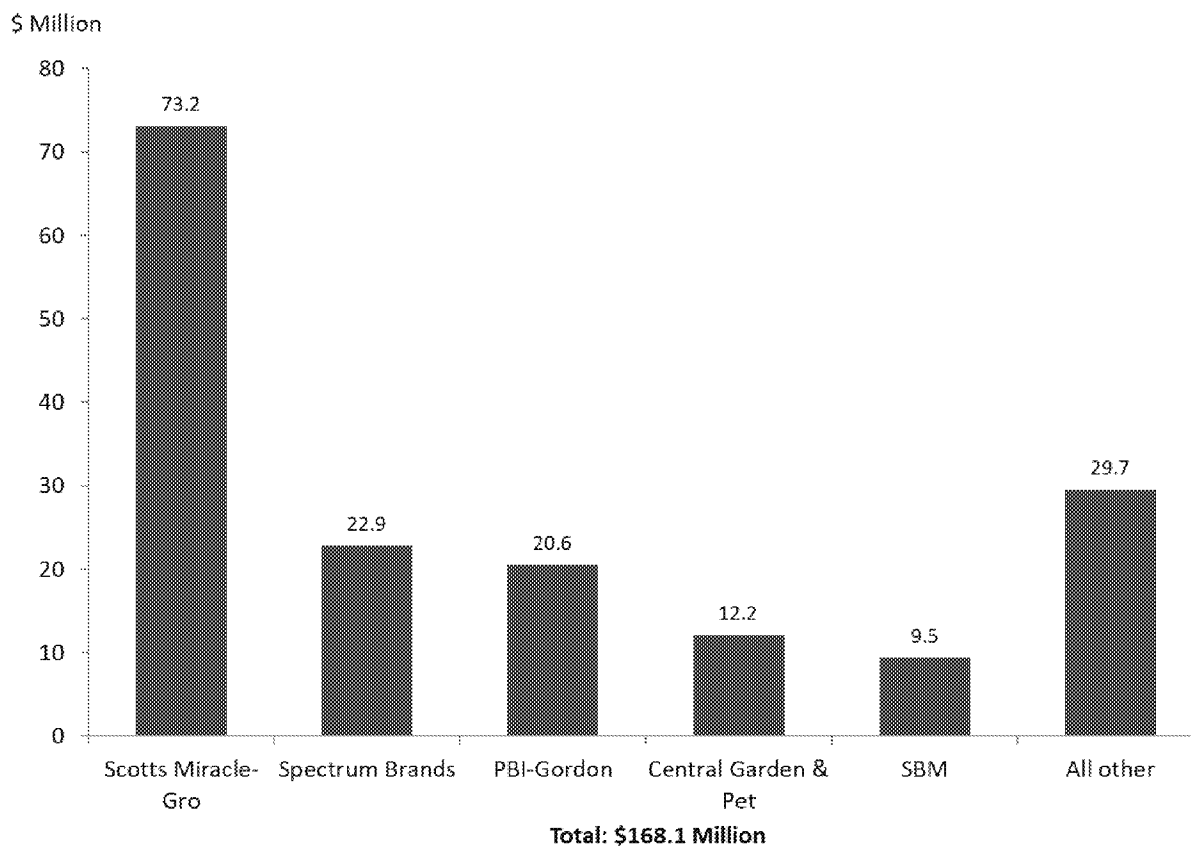


Table 4A-6: U.S. Sales of Consumer Lawn Herbicides by Major Marketer, 2016

Brand(s)	Company	\$ Thousand	% Of total
Ortho, Scotts	Scotts	73,277	43.6
Spectracide	Spectrum Brands	22,875	13.6
Acme, Gordon's, Trimec	PBI-Gordon	20,600	12.3
Image, Maxide, Lilly Miller	Central Garden & Pet	12,250	7.3
Preen, GreenView	Lebanon Seaboard	10,560	6.3
Bayer Advanced	SBM	9,500	5.6
Ferti-Lome	Voluntary Purchasing Group	5,244	3.1
Monterey	Monterey	3,000	1.8
Fortify, American Green, Easy Weeder	The Andersons	3,000	1.8
Bonide	Bonide Chemical	2,500	1.5
Southern Ag	Southern Agricultural Insecticides	1,400	0.8
All other-a	-	4,000	2.4
Total		168,106	100.0

a- Includes various small marketers with limited lawn herbicide sales.

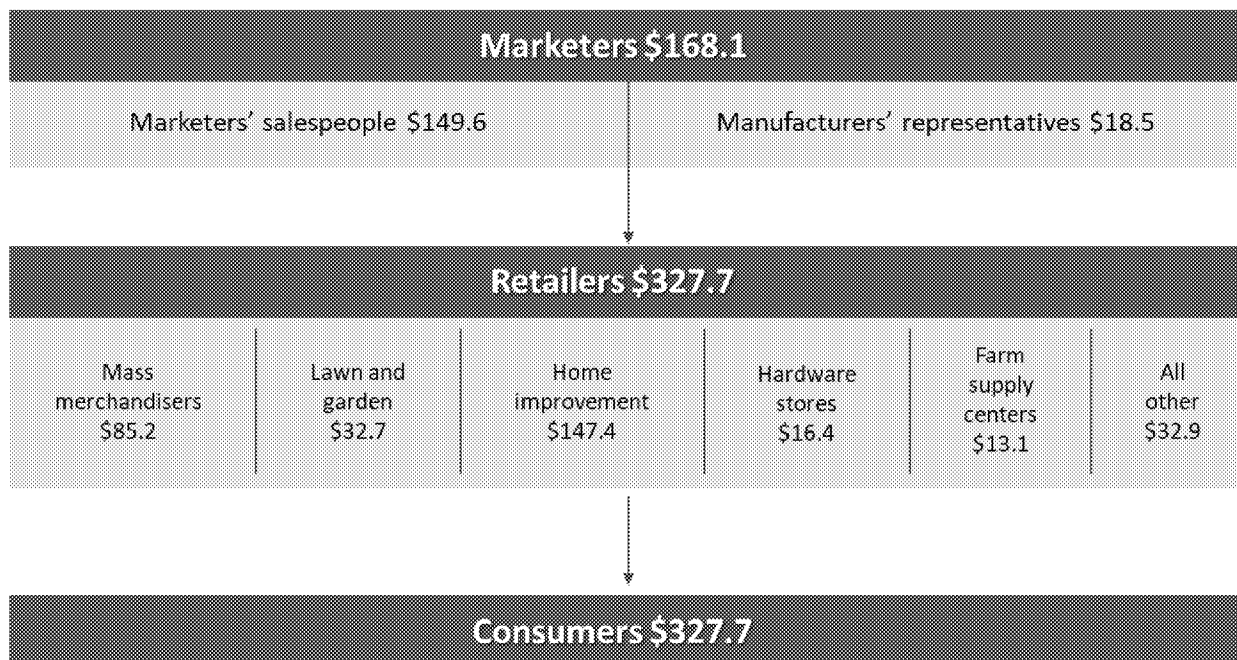
DISTRIBUTION CHANNELS

Lawn herbicides are sold primarily by company sales representatives directly to large retailers. Direct sales to retail outlets are estimated to represent 89.0% of the total, with sales through reps accounting for the balance.

Home improvement centers and mass merchandise stores are the most important retail outlets for lawn herbicides, with home improvement centers accounting for about 45.0% of sales, and mass merchandise stores representing 26.0% of sales. Lawn and garden centers, hardware stores, and farm supply stores are also significant outlets for these products.

Figure 4A-2: Estimated U.S. Distribution of Consumer Lawn Herbicides, 2016

Millions of marketers' dollars



a- Includes retail nurseries.

b- Includes supermarkets and grocery stores, warehouse clubs, and other retail outlets.

The channel data reflect the number of respondents that purchase the product category in each type of outlet. This historical method does not take into account the impact of income differences on channel revenue. To account for that impact, this analysis used the respondents with incomes of more than \$50,000 per year to reflect the higher disposable incomes spent on lawn, garden, and home products, as well as larger lot sizes associated with these higher-income individuals. Both factors would tend to increase their spending per purchase. Kline & Company has not altered the tabulations shown in this section, but has used only the higher-income respondents to calculate distribution channel importance.

PROMOTION

The consumer lawn and garden market has undergone a major change in recent years with the sharp decline in the number of independent retailers and the concurrent increase in the number of mass marketers and home improvement centers. Currently, it is estimated that 75.0% of the business is done through large retailers, with many manufacturers now selling to them directly.

In many cases, advertisements for herbicide products are part of a general campaign promoting the entire product line rather than lawn herbicides specifically. Cooperative advertising programs and trade show participation are also used for the promotion of an overall line. Smaller regional marketers typically rely on cooperative advertising programs with retailers and distributors.

The primary traceable advertiser in the category is The Scotts Miracle-Gro Company, which spent \$41.6 million in 2016 for all products, virtually all on television advertising. Lebanon Seaboard spent \$1.2 million, primarily on herbicide products including GreenView. Spectrum Brands shows slightly over \$500,000 in TME, including advertisements for herbicide brands.

OUTLOOK

Sales of lawn herbicides, like insecticides, are affected from year to year by weather conditions in key regions of the country. The consumer's desire to keep the home lawn free of weeds remains an important factor, as this market segment shows continued stability.

Sales of lawn herbicides are expected to increase slightly through 2021, and are projected to reach approximately \$181.1 million, at an annual compound increase of 1.5%.

Table 4A-7: Outlook for Lawn Herbicides in the U.S. Consumer Market, 2016-2021

Year	\$ Million	Average annual growth, %
2016	168.1	-
2021	181.1	1.5

4B. GARDEN AND NONSELECTIVE HERBICIDES

Marketers' sales of garden and nonselective herbicides are estimated at \$317.2 million in 2016, an annualized increase of 1.6% over sales of \$292.4 million in 2011. Consumer interest in glyphosate-based nonselective vegetation control herbicides continues to be strong due to their effectiveness, their reputation for safety, the increasing popularity of spot-treatment of weeds, and stronger promotion for edging, maintenance of paved areas, and other applications.

The following business development activity has affected this segment in the reporting period:

- In early 2017, PBI-Gordon enters into a partnership with Kumiai Chemical Industry Co. Ltd. and Ihara Chemical Industry Co. Ltd., Japan, to develop herbicides containing a new pyrimisulfan active ingredient. The product is marketed under the brand name Vexis.
- In 2016, SBM acquires Bayer Garden and Bayer Advanced businesses in both Europe and North America, and it has created a separate business unit named SBM Life Science to manage the consumer pesticide market. SBM Life Science has its headquarters in France and provides plant protection and home and garden care products.
- The Andersons announces plans to exit the retail business and close its stores by the end of 2017 due to huge pre-tax losses in excess of \$20.0 million in the past eight years. Even though the company has closed three stores and invested in other stores in order to maintain the retail segment, sales have continued to decline and are expected to decline in the future due to changing consumer preferences.
- In 2012, Valent announced an agreement with The Scotts Miracle-Gro Company wherein Scotts acquired certain assets of the Green Light Company, including trademarks for the Green Light brands Amaze, Super Bloom, Rose Defense, Conquest Insecticide Concentrate, and Yard Safe Insect Repellent, among others.
- In early 2012, Howard Johnson's Enterprises, a Missouri-based manufacturer, marketer, and innovator of lawn and garden products for consumer and professional use, was acquired by Central Garden & Pet.

New product introductions in this segment include the following:

- In 2014, Bonide acquired the BurnOut line of natural weed killers from St. Gabriel Laboratories. BurnOut works extremely quickly to control weeds with a combination of natural ingredients including acetic acid and clove oil.
- In its 2012 catalogue, VPG has introduced a number of new products. The company's most recent launches under the Hi-Yield brand are Nutsedge Control and Ornamental Weed Preventer. Under the Natural Guard brand, VPG has recently launched Organic Spot Weeder.

PRODUCT DESCRIPTION

Garden herbicides provide preemergence control of broadleaf weeds and grasses in flowerbeds and vegetable gardens and under trees and shrubs. Nonselective herbicides are used for general control of brush, woody plants, weeds, and grasses and can be either residual or nonresidual in their effect. Nonselective herbicides are particularly useful for removing unwanted vegetation from driveways, sidewalks, patios, and along fence lines. They are also increasingly being used for spot treatment of weeds in turf.

THE MARKET

Marketers' sales

Marketers' sales of garden and nonselective herbicides are estimated at \$317.2 million in 2016, an annualized increase of 1.6% over sales of \$292.4 million in 2011.

Table 4B-1: Sales of Garden Herbicides to the U.S. Consumer Market, 2001-2016

Year-a	\$ Million	Average annual growth, %
2001	248.4	4.3
2003	265.7	3.4
2005	279.5	2.6
2007	285.7	1.1
2009	321.1	6.0
2011	292.4	(4.6)
2016	317.2	1.6

a- This study was not conducted in 2002, 2004, 2006, 2008, 2010, 2012, 2013, 2014, or 2015.

Sales by region

The South accounts for the largest percentage of sales of garden and nonselective herbicides, followed by the Midwest and the Northeast.

Table 4B-2: Sales of Garden Herbicides in the U.S. Consumer Market by Region, 2016

Region	\$ Million	% Of total
South	125.0	39.4
Midwest	80.3	25.3
Northeast	61.5	19.4
West	50.4	15.9
Total	317.2	100.0

Retail shipments

Retail shipments of garden and nonselective herbicides are estimated at 37.2 million lb and 29.6 million gal of formulated product in 2016.

Product form

Most nonselective products are liquids. Garden herbicides are sold in both solid and liquid forms.

Table 4B-3: Sales of Garden Herbicides in the U.S. Consumer Market by Product Form, 2011

Product form	Million			% Of total value
	Lb	Gal	\$	
Liquid	-	29.6	268.5	84.6
Solid	37.2	-	48.7	15.4
Total-a	37.2	29.6	317.2	100.0

a- Includes minor amounts of aerosol, dust, and water-soluble powder forms of garden and nonselective herbicides.

Product type

Nonselective herbicides dominate this product category, accounting for 79.4% of sales in 2016. Garden herbicides, which by nature of their use are all selective, make up the remaining 20.6%. Almost all nonselective herbicides are postemergence, nonresidual products. Garden herbicides are typically preemergence products with some residual activity.

Table 4B-4: Sales of Garden Herbicides to the U.S. Consumer Market by Product Type, 2016

Product type	\$ Million	% Of total
Nonselective	251.9	79.4
Garden/selective	65.3	20.6
Total	317.2	100.0

Active ingredients

Glyphosate is the most widely used active ingredient in nonselective herbicides and accounts for more than 70.0% of total active ingredient weight in 2016.

Table 4B-5: Volume of Active Ingredients Used in Garden Herbicides in the U.S. Consumer Market, 2016

Active ingredient	Thousand lb	% Of total
Glyphosate	5,024	73.7
Pelargonic acid	680	10.0
Trifluralin	485	7.1
2,4-D	131	1.9
Diquat	106	1.6
All other-a	388	5.7
Total	6,814	100.0

a- Includes 2,4-D, dicamba, dithiopyr, imazapic, fluazifop, oxyfluorfen, clove oil, citric acid, and triclopyr, among other active ingredients.

Private-label activity

Private-label products represent a minor portion of nonselective and garden herbicide sales and are estimated to represent less than 5.0% of total sales in 2016.

PRICES AND MARGINS

Retail margins for garden and nonselective herbicides average from 35.0% to 40.0%.

Table 4B-6: Retail Prices of Selected Consumer Garden and Nonselective Herbicides in the United States, 2016

Brand	Marketer	Form	Size	Retail price, \$
Garden Safe Weed and Grass Killer RTU	Spectrum Brands	Liquid	24 fl oz	5.99
GreenView Preen Garden Weed Preventer	Lebanon Seaboard	Granular	13 lb	30.19
Monterey Weed Impede 2-in-1 Weed Killer (RTU)	Monterey Lawn & Garden	Liquid	32 fl oz	20.96
Ortho GroundClear Vegetation Killer Concentrate	Scotts	Liquid	1 gal	29.41
Monterey Weed Whacker Jet Spray Aerosol	Monterey Lawn & Garden	Liquid	22 oz	13.15
Roundup Poison Ivy & Tough Brush Killer Concentrate	Scotts	Liquid	32 oz	26.99
Roundup Weed & Grass Killer with Pump 'N Go Sprayer	Scotts	Liquid	1.33 gal	14.97
Roundup Weed & Grass Killer Concentrate Plus	Scotts	Liquid	64 oz	39.88
Roundup Weed & Grass Killer Super Concentrate	Scotts	Liquid	64 oz	74.97
Spectracide Extended Concentrate Weed & Grass Killer	Spectrum Brands	Liquid	32 fl oz	19.97

PACKAGING

Nonselective products are packaged in plastic jugs, glass bottles, and metal cans ranging in size from 1 pt to 1 gal. Garden herbicides are often sold in paperboard canisters or plastic containers with shaker tops. Liquid ready-to-use (RTU) products are packaged in plastic bottles with pump-spray applicators. Aerosols are packaged in metal canisters.

COMPETITION

The Scotts Miracle-Gro Company, the marketer of Monsanto's glyphosate, is the dominant marketer of herbicides in this product category, accounting for approximately 56.0% of total sales in 2016. Note that this report is crediting Scotts with Roundup sales, but, in reality, Scotts records only an agency commission from Monsanto on its books for these sales. Roundup accounts for most of Scotts' sales in this category. Spectrum Brands ranks a distant second with 14.4% of category sales, followed by Lebanon Seaboard with 10.6%.

Figure 4B-1: U.S. Sales of Consumer Garden and Nonselective Herbicides by Major Marketer, 2016

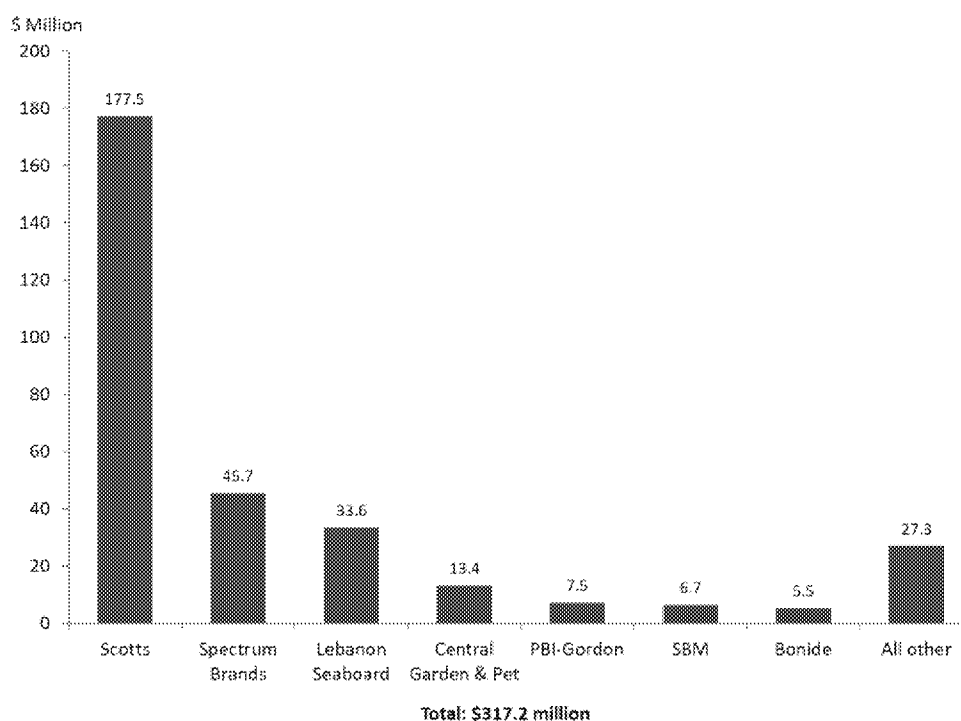


Table 4B-7: U.S. Sales of Consumer Garden and Nonselective Herbicides by Major Marketer, 2016

Brand(s)	Company	\$ Thousand		Total	% Of total
		Garden herbicides	Nonselective herbicides		
Roundup, Ortho, Triox-a	Scotts	8,986	168,478	177,464	55.9
Spectracide, Weed Stop	Spectrum Brands	9,150	36,600	45,750	14.4
GreenView, Preen	Lebanon Seaboard	31,430	2,210	33,640	10.6
Lilly Miller, Worry-Free	Central Garden & Pet	4,250	9,200	13,450	4.2
Gordon's	PBI-Gordon	3,700	3,800	7,500	2.4
SBM	Bayer Advanced	1,500	5,250	6,750	2.1
Bonide, BurnOut	Bonide	500	5,000	5,500	1.7
Ferti-Lome, American	Voluntary Purchasing Group	-	4,720	4,720	1.5
Security, Surrender	Control Solutions, Inc.	-	3,700	3,700	1.2
Easy Weeder	The Andersons	1,500	-	1,500	0.5
Southern Ag	Southern Agricultural	1,100	-	1,100	0.3
Moss Killer	St. Gabriel Organics	200	400	600	0.2
Enforcer	Zep Inc.	-	525	525	0.2
All other-b	-	3,000	12,000	15,000	4.7
Total		65,316	251,883	317,199	100.0

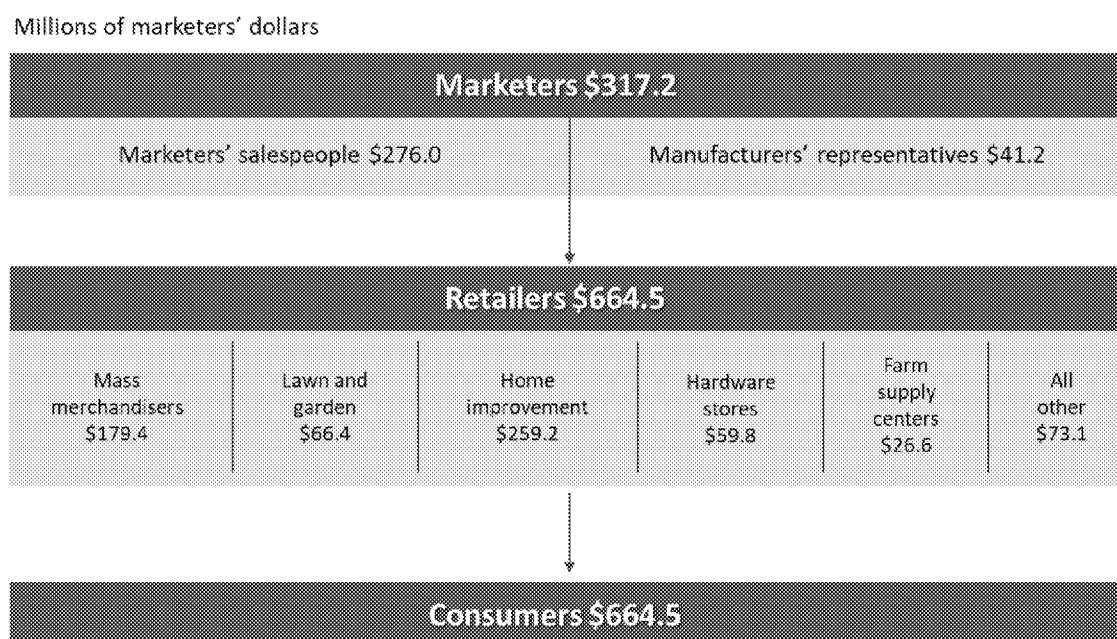
a- Includes Roundup sales, estimated by Kline at \$158.0 million. These sales are made by Scotts, but not reported by Scotts because of its licensing arrangement with Monsanto. Scotts records only licensing income.

b- Includes other small marketers.

DISTRIBUTION CHANNELS

Almost all sales of garden and nonselective herbicides are made by company sales representatives in 2016. Home improvement centers are the most important retail outlets for garden and nonselective herbicides, accounting for an estimated 39.0% of sales in 2016. Mass merchandise stores rank second with about 27.0% of sales.

Figure 4B-2: Estimated U.S. Distribution of Consumer Garden and Nonselective Herbicides, 2016



The channel data reflect the number of respondents that purchase the product category in each type of outlet. This historical method does not take into account the impact of income differences on channel revenue. To account for that impact, this analysis used the respondents with incomes of more than \$50,000 per year to reflect the higher disposable incomes spent on lawn, garden, and home products, as well as larger lot sizes associated with these higher-income individuals. Both factors would tend to increase their spending per purchase. Kline & Company has not altered the tabulations shown in this section, but has used only the higher-income respondents to calculate distribution channel importance.

PROMOTION

In many cases, advertisements for herbicide products are part of a general campaign promoting the entire product line rather than garden herbicides specifically. Cooperative advertising programs and trade show participation are also used for the promotion of an overall line. Smaller regional marketers typically rely on cooperative advertising programs with retailers and distributors.

The primary traceable advertiser in the category is The Scotts Miracle-Gro Company, which spent \$41.6 million in 2016 for all products, virtually all on television advertising. Lebanon Seaboard spent \$1.2 million, primarily on herbicide products including GreenView. Spectrum Brands shows slightly over \$500,000 in TME, including advertisements for herbicide brands. Media expenditure details are shown in the company profiles.

OUTLOOK

Sales of garden herbicides are dependent on weather conditions, but more importantly on consumer interest in flower and vegetable gardening, and thus sales can fluctuate from year to year. Sales of nonselective, glyphosate-based and other total vegetation control herbicides will show further growth for the next several years as more consumers become aware of these products and as new brands continue to become available.

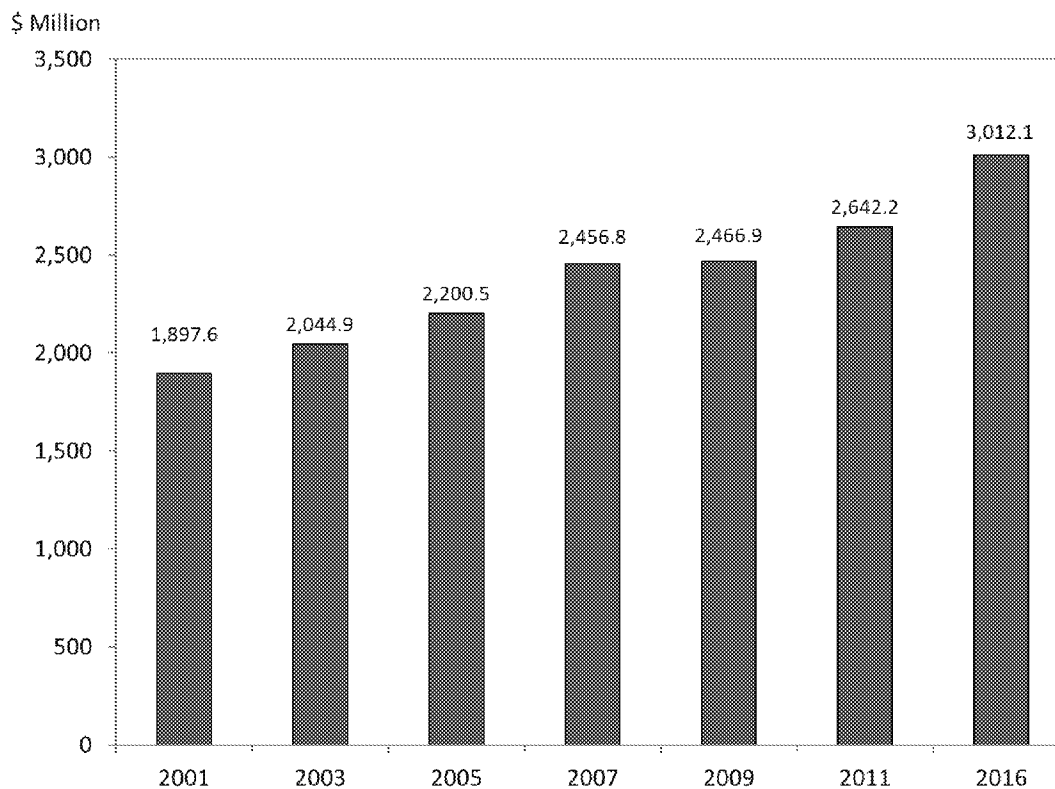
Sales of garden and nonselective herbicides will continue to increase at a modest rate over the next five years as market penetration of total vegetation control products slowly rises. Sales are projected to reach \$350.2 million in 2021, a 2.0% annual increase.

Table 4B-8: Outlook for Garden Herbicides in the U.S. Consumer Market, 2016-2021

Year	\$ Million	Average annual growth, %
2016	317.2	-
2021	350.2	2.0

5. INSECTICIDES

Figure 5-1: Total Consumer Insecticides Category Sales, 2001 to 2016



COVERAGE

This section covers insecticides and insect repellents for indoor and outdoor use, as follows:

- 5A. Outdoor Insecticides
- 5B. Household and Houseplant Insecticides
- 5C. Pet Insecticides
- 5D. Insect Repellents

Insecticides combined with fungicides or herbicides, other than combination fertilizer-insecticide products for houseplant or garden use, are included in this category. Moth control products are no longer covered in this study.

THE MARKET

Marketers' sales

Marketers' sales of lawn, garden, household, pet insecticides, and insect repellents in the United States are estimated at \$3,012.1 million in 2016, an annualized increase of 2.8% and a net increase of 14.0% from 2011 sales of \$2,642.2 million.

Table 5-1: Sales of Insecticides to U.S. Consumer Market, 2001 to 2016

Year-a	\$ Million	Average annual growth, %
2001	1,897.6	3.3
2003	2,044.9	3.9
2005	2,200.5	3.8
2007	2,456.8	5.7
2009	2,466.9	0.2
2011	2,642.2	3.5
2016	3,012.1	2.8

a- This study was not conducted in 2002, 2004, 2006, 2008, 2010, 2012, 2013, 2014, or 2015.

Sales by region

Among the regions, the South accounts for the largest percentage of insecticide sales in 2016, followed by the North Central and the Northeast.

Table 5-2: Sales of Insecticides to U.S. Consumer Market by Region, 2016

Region	\$ Million	% Of total
South	1,197.1	39.7
North Central	770.5	25.6
Northeast	585.3	19.4
West	459.2	15.2
Total	3,012.1	100.0

Retail shipments

Shipments of consumer insecticides, including insect repellents, are estimated at 263.8 million lb and 45.9 million gal of formulated product in 2016.

Application

Pet insecticides account for about 49% of total sales of consumer insecticides in 2016. Outdoor and household insecticides rank second and third, respectively.

Table 5-3: Sales of Insecticides to U.S. Consumer Market by Application, 2016

Application	Million			% Of total		
	Lb	Gal	\$	Weight	Volume	Value
Pet	5.6	6.6	1,473.4	2	14	49
Outdoor	143.1	11.9	623.2	54	26	21
Household	97.2	25.1	504.7	37	55	17
Repellent	17.9	2.3	410.8	7	5	14
Total	263.8	45.9	3,012.1	100	100	100

Product form

Pet insecticides, accounting for 46% of total consumer sales in 2016, encompass several product forms unique to that category. Aerosol products and liquids make up 12% and 14% of consumer sales, respectively. Solids, including bait trays, account for approximately 17% of total sales.

Table 5-4: Sales of Insecticides to U.S. Consumer Market by Product Form, 2016

Product form-a	Million			% Of total		
	Lb	Gal	\$	Weight	Volume	Value
PET INSECTICIDES	5.6	6.6	1,473.4	2	14	46
AEROSOL-a	93.1	-	214.3	32	-	12
LIQUID	-	37.0	448.9	-	81	14
SOLID-b						
Granular-c	115.7	-	326.7	4	-	6
All other-d	28.2	-	133.8	49	-	11
Total	150.7	-	460.5	54	-	17
INSECT REPELLENTS	17.9	2.3	410.8	4	7	13
FOGGERS	3.3	-	4.2	1	-	d
TOTAL-e	287.3	47.8	3,012.1	100	100	100

a- Does not include pet insecticide aerosols or insect repellent aerosols.

b- Pet insecticides and insect repellents are identified separately because many product forms in these categories are not comparable to other insecticides.

c- Includes tablets and baits.

d- Includes dusts, powders, cakes, spikes, balls, and crystals.

d- Minor.

Active ingredients

N,N-diethyl-meta-toluamide (commonly referred to as DEET) accounts for the largest amount, or 33%, of active ingredient weight in this segment, reflecting its presence in the majority of insect repellent products and the comparatively high concentrations used. Other major active ingredients include bifenthrin (8.8%), IR3535 (8.7%), picardin (5.7%), and many others. The remaining active ingredients are fragmented, with none accounting for more than 3% of active ingredient weight, which totals 22.9.3 million lb in 2016.

ACQUISITIONS, DIVESTITURES, AND NEW PRODUCTS

The following business developments have occurred in this segment in the reporting period:

- In 2016, SBM acquires Bayer Garden and Bayer Advanced businesses in both Europe and North America, and it has created a separate business unit named SBM Life Science to manage the consumer pesticide market. SBM Life Science has its headquarters in France and provides plant protection, home, and garden care products.
- In 2016, Elanco announces an agreement to acquire Boehringer Ingelheim Vetmedica, Inc.'s U.S. feline, canine, and rabies vaccines portfolio. The deal includes a fully integrated manufacturing and R&D site for \$885 million, including the estimated cost of acquired inventory.
- In 2016, Scotts Miracle-Gro introduces the Connected Yard platform tied to a software platform called Gro. Through this platform, the company aims at giving advice to the gardeners on how to succeed in having healthy lawns and gardens. The launch partners of this platform include Blossom, Green IQ and Lono, and soil sensor companies PlantLink and Parrot.
- In 2016, Scotts eliminates neonicotinoids from all its outdoor products. Ortho is among the leading brand of insect control products for lawn and garden use. The company began its efforts to eliminate neonicotinoid-based pesticides from the product for outdoor use. Scotts took this decision after carefully considering the harmful effects to honey bees and other pollinators.
- In 2015, Vestar Capital acquired Woodstream, and it is now a portfolio company of Vestar. The consumer sector of Vestar comprises various portfolio companies that offer food, services, apparel, household goods, and retail services.
- In 2015, Merck Animal Health acquired Harrisvaccines, a company that manufactures vaccines for food production and companion animals. By combining the Harrisvaccines's R&D and product portfolio, Merck aims at addressing the most severe diseases impacting animals.

- In 2015, Merck Animal Health and China Animal Husbandry Industry entered into a partnership, wherein, both the companies will share scientific and commercial expertise and explore animal health vaccine opportunities in China.
- In 2015, Scotts acquired the assets of Action Pest Control, one of the major residential pest control providers in the Midwestern U.S. The acquisition is in-line with the Scotts long-term growth strategy.
- In 2014, Central Garden acquired certain assets of Envincio LLC, a wholly owned subsidiary of SantoLubes LLC. The acquisition enabled the company to be a major supplier and product innovator in the insecticides market.
- In 2014, Virbac entered into an agreement with Elanco to acquire veterinary products that were earlier marketed by Novartis Animal Health. Under the agreement, Virbac acquired rights for the United States on trademarks, marketing, patents, and other assets related to Sentinel Flavor Tabs and Sentinel Spectrum, major parasiticides for dogs.
- In 2014, Elanco acquired Novartis Animal Health and Lohmann Animal Health business to increase its animal, livestock, and aquaculture offerings. The \$5.4 billion deal created the world's second largest animal health company. Elanco subsequently sold the U.S. rights on trademarks, marketing, patents, and other assets related to Sentinel Flavor Tabs and Sentinel Spectrum products to Virbac, as noted above.
- In 2013, Zoetis, the former animal health business of Pfizer, Inc., became fully independent with the acceptance of Pfizer shares tendered in an exchange offering.
- In 2012, Perrigo acquired Sergeant's Pet Care Products, Inc., the privately held OTC pet care business. The acquisition expands Perrigo's portfolio to include a new adjacent product category, companion animal healthcare. As per the agreement, Perrigo acquired all the Sergeant's assets for \$285 million.
- In 2012, Howard Johnson's Enterprises, a Missouri-based manufacturer, marketer, and innovator of lawn and garden products for consumer and professional use, was acquired by Central Garden & Pet.
- In 2012, Valent announced an agreement with The Scotts Company wherein Scotts will acquire certain assets of the Green Light Company, including trademarks for the Green Light brands Conquest Insecticide Concentrate, and Yard Safe Insect Repellent, among others.

New product introductions in the reporting period include the following:

- In its 2012 catalogue, VPG introduced a number of new products. Under the Ferti-Lome brand, the company launched 2-N-1 Systemic for garden protection against pests and diseases. Under the Hi-Yield brand are Systemic Insect Spray and Systemic Insect Spray RTS.
- In 2012, Summit Chemical launched its Biological Caterpillar & Webworm Control, an eco-friendly caterpillar killer that targets caterpillars and webworms.
- St. Gabriel Organics launched new products in its organic line in the last two years: Stink Bug Killer, Bugshooter Garden Insect Killer, and Flyswatter.
- PIC recently launched Bugables Mosquito Repellent Stickers and Twist It Mosquito Repeller. The company also plans to launch specific control products for bed bugs, spiders, and insecticide-free products.

- In 2011, Sergeant's launched a generic equivalent of the Frontline in Sergeant's Pet Care Products under the name FiproGuard. Fiproguard is a less expensive version with the same active ingredient as Frontline Top Spot, aimed at the same effectiveness and safety profile more economically. Also in 2011, Sergeant's acquired the rights to a patented pest-control formula from Sumitomo Chemical Co. of Japan. This entitled Sergeant's to the manufacturing and sale of the spot-on pesticidal composition combining fipronil with an insect growth regulator, such as methoprene or pyriproxyfen.
- In 2011, Bonide introduced new line items: Garden Dust, based on pyrethrin, and Dragon Dust with Copper, based on carbaryl and copper.
- In 2011, Bayer introduced LifeNet mosquito nets.
- In early 2010, Control Solutions launched Optimate SC, an insecticide containing gamma cyhalothrin for use against adult and immature beetles, darkling beetles, and hide and carrion beetles. The company also launched two products under the Pyrofos brand: Pyrofos 1.5 ULV containing chlorpyrifos to control adult mosquitoes in outdoor areas; and Pyrofos CS, a micro-encapsulated premise insecticide to be used in and around livestock, housing and commercial buildings. In 2011, the company launched the first post-patent fipronil products under the Taurus brand, including Taurus G, a granular insecticide containing 0.0143% fipronil, and Taurus SC, a liquid formulation containing 0.8 lb of fipronil per gal.
- J.T. Eaton's new products include J.T. Eaton Bedbug Spray for Luggage, a permethrin-based product that kills bedbugs for four to six weeks, Webster Cobweb Duster, a powder coated insecticidal dusters.
- In 2009, Woodstream Corporation's Safer Brand released ready-to-spray organic pest control concentrates: Safer Brand Bug Patrol, Mosquito & Tick Killer and Grub Killer are used in ready-to-spray concentrate formulations that connect to a garden hose for simple organic pest control. In 2010, Woodstream launched Safer Brand EndALL.
- In 2009, Southern Agricultural launched an imidacloprid-based insecticide product called Grubs Away. In the organic and natural category, the company has seven retail proprietary products marketed as "Reduced Risk, Organic or Eco Friendly." These organic products include: Payback Fire Ant Bait with 0.15% Spinosad, Boric Acid Roach Powder with 100% boric acid, Neem Oil Triple Action with 70% neem oil, Dipel Dust with *Bacillus thuringiensis*, Thuricide BT Caterpillar Control with *Bacillus thuringiensis*, Parafine Horticultural Oil with 98% parafinic oil, and Natural Pyrethrin Concentrate with 0.96% pyrethrin.

COMPETITION

Combined sales of household, outdoor, pet, and houseplant insecticides, and insect repellents for the 10 largest suppliers of consumer products collectively represent approximately 85% of the total market. Merial accounts for 18.3% of total sales, followed by S.C. Johnson with 14.1%. Spectrum Brands, The Scotts Miracle-Gro Company, and Bayer round out the top five suppliers in 2016 with approximately 12%, 9%, and 8%, respectively.

Table 5-5: U.S. Sales of Consumer Insecticides by Major Marketer, 2016

Company	\$ Thousand	% Of total
Merial	550,000	18.3
S.C. Johnson	425,000	14.1
Spectrum Brands	368,000	12.2
The Scotts Miracle-Gro Company	269,025	8.9
Bayer	238,500	7.9
Hartz Mountain	220,000	7.3
Central Garden & Pet	157,190	5.2
Perrigo	122,500	4.1
Virbac	98,700	3.3
Zoetis	98,500	3.3
Avon	68,000	2.3
Woodstream	62,500	2.1
SBM	52,800	1.7
Lamplight Farms	40,800	1.3
Merck Animal Health	28,000	0.9
Elanco	22,000	0.7
All other-a	190,585	6.3
Total	3,012,100	100.0
a- Includes The Andersons, Bengal, Bonide, and Zep, among others.		

DISTRIBUTION CHANNELS

Distribution of lawn, garden, and household insecticides varies significantly by product category and marketer. While two-step distribution is still important in this product category, manufacturers now sell most material directly to retailers, particularly the large chains. Household insecticides, in contrast, are often sold directly to retailers. Approximately 78% of sales are made by company sales representatives, and 22% are made by manufacturers' representatives.

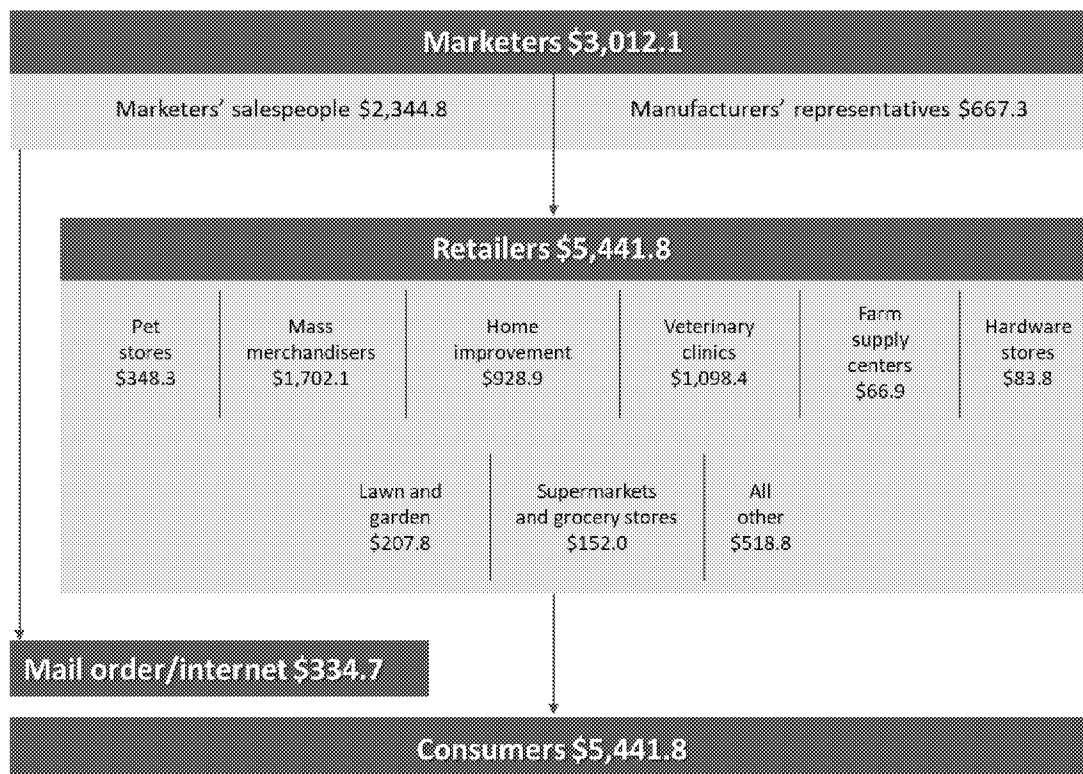
The 2016 edition of this report is showing minor changes in second tier distribution outlets compared to prior editions. At the top, discount/mass merchandise stores, veterinarians (because of pet insecticides) and home improvement centers remain the leading retail outlets for consumer insecticides, accounting for approximately 31%, 20%, and 17% of total sales, respectively.

Table 5-6: U.S. Sales of Consumer Insecticides by Type of Retail Outlet, 2016

Retail outlets	\$ Million	% Of total
RETAILERS		
Mass-merchandise stores	1,702.1	31.3
Veterinarians	1,098.4	20.2
Home improvement centers	928.9	17.1
Pet superstores	348.3	6.4
Lawn and garden centers-a	207.8	3.8
Supermarkets and grocery stores	152.0	2.8
Hardware stores	83.8	1.5
Farm supply stores	66.9	1.2
Total	4,588.2	84.3
INTERNET/MAIL ORDER	334.7	6.2
ALL OTHER-b	518.8	9.5
TOTAL	5,441.8	100.0
a- Includes retail nurseries.		
b- Includes pet stores, warehouse stores, drug stores, and other retail outlets.		

Figure 5-2: Estimated U.S. Distribution of Consumer Insecticides, 2016

Millions of marketers' dollars



The channel data in Figure 5-2 reflects the number of respondents that purchase the product category in each type of outlet. This historical method does not take into account the impact of income differences on channel revenue. To account for that impact, this analysis used the respondents with incomes of more than \$50,000 a year to reflect the higher disposable incomes spent on lawn, garden, and home products, as well as larger lot sizes associated with these higher-income individuals. Both factors would tend to increase their spending per purchase. Kline & Company has not altered the tabulations shown in this section, but has used only the higher-income respondents to calculate distribution channel importance.

OUTLOOK

Sales of insecticides and insect repellents fluctuate from year to year based on weather conditions, which can intensify or minimize insect problems. Long-term growth in the consumer insecticide market appears to be good as the economy fully recovers. Growth in this segment is expected due to consumers placing importance on keeping their homes, yards, and pets insect-free. General awareness of and concern over the West Nile and Zika viruses should continue to fuel growth of outdoor insecticides and insect repellents.

Total sales of consumer insecticides and insect repellents are projected to reach close to \$3.4 billion in 2021, an average annual increase of 2.4%.

Table 5-7: Outlook for Insecticides to the U.S. Consumer Market, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	3,012.2	-
2021	3,373.3	2.4

5A. OUTDOOR INSECTICIDES

Sales of outdoor insecticides at the manufacturers' level are estimated at \$623.2 million in 2016, representing an annualized increase of 1.4% compared to 2011 sales of \$582.4 million.

The following business developments have occurred in this segment in the reporting period:

- In October 2016, SBM acquired Bayer Garden and Bayer Advanced businesses in both Europe and North America, and it has created a separate business unit named SBM Life Science to manage the consumer pesticide market. SBM Life Science has its headquarters in France and provides plant protection and home and garden care products.
- In March 2016, Scotts Miracle-Gro introduced Connected Yard, a concept tied to the Gro software platform. Through this platform, the company aims to give advice to gardeners on how to succeed in creating healthy lawns and gardens. The launch partners of this platform include Blossom, Green IQ, and Lono, and soil sensor companies PlantLink and Parrot.
- In April 2016, Scotts eliminated neonicotinoids from all its outdoor products. Ortho is among the leading brands of insect control products for lawn and garden use. The company began its efforts to eliminate neonicotinoid-based pesticides from the product for outdoor use. Scotts took this decision after carefully considering the harmful effects to honey bees and other pollinators.
- In June 2015, Vestar Capital acquired Woodstream, which is now a portfolio company of Vestar. Vestar Capital is among the leading private-equity firms that specialize in management buyouts and growth equity investments. The consumer sector of Vestar consists of various portfolio companies that offer food products, apparel, household goods, and retail services.
- In January 2015, Scotts acquired the assets of Action Pest Control, one of the major residential pest control providers in the Midwestern United States. The acquisition is in line with Scotts' long-term growth strategy.
- In 2014, Central Garden acquired certain assets of Envincio LLC, a wholly owned subsidiary of SantoLubes LLC. The acquisition enabled the company to be a major supplier and product innovator in the insecticides market.
- In 2012, Howard Johnson's Enterprises, a Missouri-based manufacturer, marketer, and innovator of lawn and garden products for consumer and professional use, was acquired by Central Garden & Pet.
- In 2012, Valent made an agreement with The Scotts Company wherein Scotts acquired certain assets of the Green Light Company, including trademarks for the Green Light brands Conquest Insecticide Concentrate and Yard Safe Insect Repellent, among others.
- In 2012, Senoret was acquired by Woodstream Corporation.

New product introductions in the reporting period include the following:

- In 2015, VPG introduced Spinosad Bagworm, Tent Caterpillar, and Chewing Insect Control. It can be applied with trigger sprayer or hose-end sprayers. The product is used to control pests such as moths, leafminers, and others.
- In 2014, Control Solutions registered Fuse, a liquid insecticide, in Florida. Fuse is an addition to CSI's pest management product portfolio.
- In 2014, Control Solutions introduced Tekko Pro, a combination chemistry that contains active ingredients, primarily, pyriproxyfen and novaluron. The product fits well within the integrated pest management approach.
- In 2014, Summit introduced Summit Year-Round Spray, a horticulture oil that controls insects on plants. The spray is environmentally friendly and kills aphids, spider mites, thrips, fungus gnats, and caterpillars, among others.
- In 2014, Central Garden & Pet introduced Bio Spot Active Care brand, a complete line of wellness products that provide flea and tick solutions for pet, home, and yard.
- Lamplight Farms introduced the innovative product TIKI Brand BiteFighter Torch Fuel, a product that provides mosquito repellency.
- In its 2012 catalog, VPG introduced three products: under the Ferti-Lome brand, 2-N-1 Systemic for garden protection against pests and diseases and under the Hi-Yield brand, Systemic Insect Spray and Systemic Insect Spray RTS.
- In 2012, Summit Chemical launched its Biological Caterpillar & Webworm Control, an eco-friendly caterpillar killer that targets caterpillars and webworms.

PRODUCT DESCRIPTION

Outdoor insecticides fall into two broad categories: lawn and garden insecticides and nonplant insecticides.

Lawn and garden insecticides

These products are designed to kill vegetation-damaging insects infesting lawns, gardens, trees, and other ornamentals. Target insects include webworms, grubs, aphids, gypsy moths, and various caterpillars. Insecticide-fungicide and insecticide-herbicide combination products are included here. For insecticide-fertilizer combination products, see the Lawn Fertilizers and Garden Fertilizers chapters.

Nonplant insecticides

These products are used to kill insects that are a direct nuisance to humans and pets, including mosquitoes, termites, ants, fleas, ticks, and other flying and crawling insects found outside the home. In many cases, these products are similar to household insecticides. Outdoor foggers are included in this group, as are flea and tick products for yard use offered by suppliers other than pet product companies.

THE MARKET

Marketers' sales

Sales of outdoor insecticides at the manufacturers' level are estimated at \$623.2 million in 2016, representing an annualized increase of 1.4% compared to 2011 sales of \$582.4 million.

Table 5A-1: Sales of Outdoor Insecticides to the U.S. Consumer Market, 1999-2016

Year-a	\$ Million	Average annual growth, %
1999	377.8	15.3
2001	427.9	6.4
2003	529.9	11.9
2005	528.8	(0.1)
2007	552.9	2.3
2009	554.9	0.2
2011	582.4	2.5
2016	623.2	1.4

a- This study is only conducted in select years.

Sales by region

Among the regions, the South leads in consumption of outdoor insecticides, accounting for about 37.8% of total sales in 2016, followed by the North Central with 30.5%.

Table 5A-2: Sales of Outdoor Insecticides to the U.S. Consumer Market by Region, 2016

Region	\$ Million	% Of total
South	235.6	37.8
North Central	190.1	30.5
Northeast	115.9	18.6
West	81.6	13.1
Total	623.2	100.0

Retail shipments

Shipments of outdoor insecticides are estimated at roughly 143.1 million lb and 11.9 million gal of formulated product in 2016.

Product form

Liquid products are the most popular form of outdoor insecticides, accounting for more than 54.0% of sales in 2016. Granular products rank second with 21.0% of sales.

Table 5A-3: Sales of Outdoor Insecticides to the U.S. Consumer Market by Product Form, 2016

Product form	Million			% Of total		
	Lb	Gal	\$	Weight	Volume	Value
Liquid	-	11.9	341.6	-	100.0	54.8
Granular	103.4	-	131.1	72.3	-	21.0
Dust	11.9	-	71.7	8.3	-	11.5
Aerosol	21.0	-	42.0	14.7	-	6.7
All other	6.8	-	36.8	4.8	-	5.9
Total	143.1	11.9	623.2	100.0-a	100.0	100.0-a
a- Does not add due to rounding.						

Product type

Kline & Company estimates that lawn and garden insecticides accounted for approximately \$375.0 million, or roughly 60.0% of sales and the bulk of physical volume in this product category, in 2016. Nonplant products, including insecticides for fire ant control, contributed the remaining 40.0%. Moreover, there is significant overlap between nonplant outdoor insecticides and household insecticides. Most manufacturers of household insecticides include products for both indoor and outdoor use in their lines and find it difficult to allocate sales of these products into separate categories. Sales of nonplant insecticides, as stated in this product category, are therefore less than what is the most likely total consumer outdoor use.

Active ingredients

Estimated consumption of active ingredients is given below. Please refer to the Lawn Fertilizers chapter of this report for fertilizer-insecticide combination product use.

Table 5A-4: Sales of Outdoor Insecticides to the U.S. Consumer Market by Active Ingredient, 2016

Active ingredient	Thousand lb	% Of total
Bifenthrin	2,016	27.8
Carbaryl	958	13.2
Acephate	712	9.8
Dylox	509	7.0
Boric acid	411	5.7
Malathion	397	5.5
Imidacloprid	36	0.5
Hydramethylnon	32	0.4
Tetramethrin	22	0.3
Lambda-cyhalothrin	19	0.3
Deltamethrin	4	0.1
Permethrin	3	0.1
All other-a	2,145	29.3
Total	7,242	100.0

a- Includes Bt strains, B-cyfluthrin, cypermethrin, cyfluthrin, fipronil, s-methoprene, spinosad, tralomethrin, and abamectin, among others.

Private-label activity

Private-label products are of relatively little importance in this product category, in large part because of the dominance of Ortho, Spectracide, Raid, and other well-known brands. Walmart is the leading marketer of private-label outdoor insecticides. Contract manufacturing is growing in importance as some suppliers have decided to distance themselves from actual pesticide production. Aerosols are also likely to be contracted out, as these products require specialized production capabilities. In total, private-label products are estimated to account for less than 10.0% of marketers' sales.

PRICES AND MARGINS

Retail margins for outdoor insecticides typically range between 35.0% and 40.0%.

Table 5A-5: Retail Prices of Selected Consumer Outdoor Insecticides in the United States, 2016

Brand	Marketer	Form	Size	Retail price, \$
Bayer Advanced 24-Hour Grub Killer Plus	Bayer	Granular	10 lb	20.97
Bayer Advanced Rose & Flower Insect Killer RTU	Bayer	Liquid	32 fl oz	4.97
Bayer Advanced Complete Insect Killer for Lawns Ready-To-Spray	Bayer	Liquid	32 fl oz	9.97
AMDRO Fire Ant Bait	Central Garden & Pet	Granule	1 lb	10.97
GardenTech Over 'n Out Fire Ant Killer	Central Garden & Pet	Granule	11.5 lb	17.97
GardenTech Sevin Insect Killer Concentrate	Central Garden & Pet	Liquid	32 fl oz	13.97
Scotts GrubEx	Scotts	Granular	15.11 lb	20.97
Ortho Bug B Gon Insect Killer Concentrate	Scotts	Liquid	32 fl oz	7.97
Ortho Bug B Gon MAX Insect Killer	Scotts	Granule	20 lb	13.97
Ortho Hornet & Wasp Killer	Scotts	Aerosol	16 oz	3.47
Spectracide Ant Shield	Spectrum Brands	Granule	3 lb	7.32
Spectracide Fire Ant Shield Yard Protection	Spectrum Brands	Granule	10 lb	20.48
Spectracide Triazicide Insect Killer Concentrate	Spectrum Brands	Liquid	1 qt	6.88
Cutter Backyard Bug Control Concentrate	Spectrum Brands	Liquid	32 oz	7.48
Safer Yard & Garden Insect Killer RTU	Woodstream	Liquid	32 oz	9.49

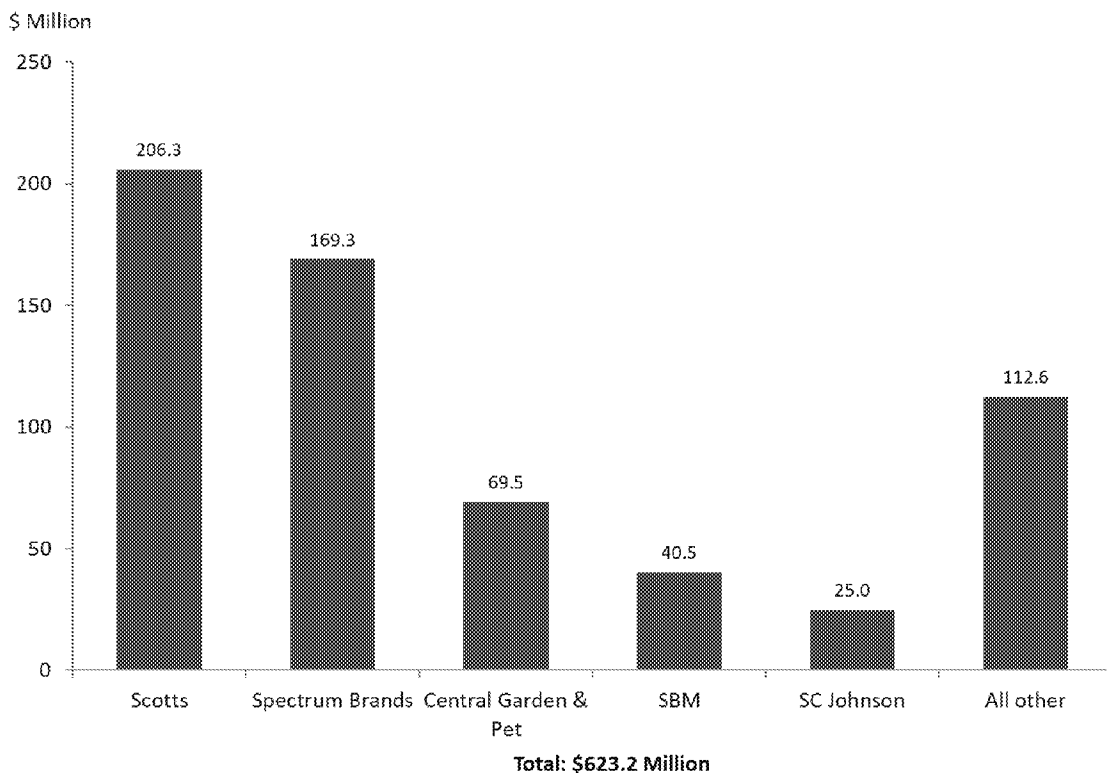
PACKAGING

Aerosol canisters typically range from 10 oz to 17.5 oz in size and often have childproof caps. Liquids are sold in either glass or plastic bottles, depending on the chemical ingredients of the contents. Sizes range from 8 oz to 128 oz, and some bottles (usually the smaller sizes) have pump-spray tops. The use of plastic bottles is standard in the industry. Glass has been almost completely phased out because a broken glass bottle can release a potentially harmful or damaging quantity of pesticide. Ready-to-use (RTU) liquids come in plastic containers, often with plastic hose-end spray or ready-to-spray applicators. Dusts are typically packaged in plastic squeeze bottles or shaker canisters, and granules in paper bags reinforced with plastic.

COMPETITION

Scotts was the leading U.S. marketer of outdoor insecticides for consumer use in 2016, with 33.1% of sales in this segment, followed by Spectrum Brands with 27.2%. Central Garden & Pet ranked third with 11.2%. The remainder of the market is fragmented.

Figure 5A-1: U.S. Sales of Consumer Outdoor Insecticides by Major Marketer, 2016



DISTRIBUTION CHANNELS

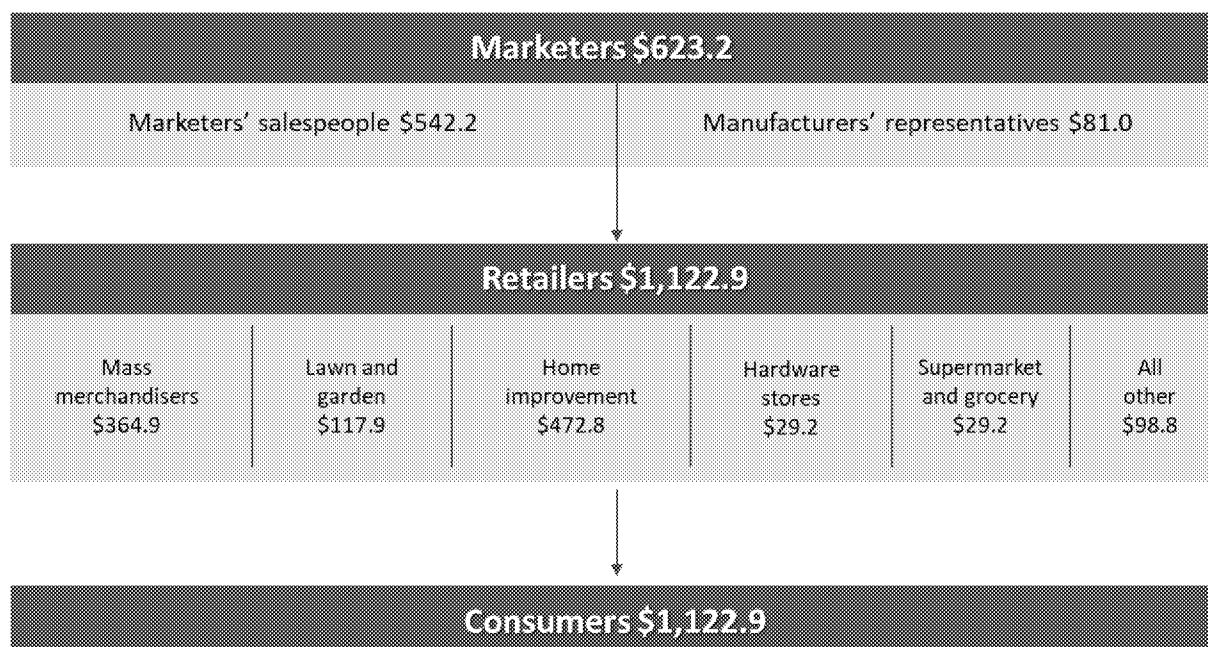
Marketers' sales representatives account for approximately 87.0% of total sales. Manufacturers' representatives account for the remaining 13.0%. Home improvement centers have passed mass merchandise stores as the leading retail outlets for outdoor insecticides, accounting for 42.1% of sales in 2016. Mass merchandise stores rank second with about 32.5% of sales, followed by lawn and garden centers with about 10.5%.

Table 5A-6: U.S. Sales of Consumer Outdoor Insecticides by Major Marketer and Brand, 2016

Brand(s)	Company	\$ Thousand	% Of total
Ortho	The Scotts Company	206,291	33.1
Hot Shot, Rid-a-Bug, Spectracide, Black Flag	Spectrum Brands	169,275	27.2
AMDRO, Lilly Miller, Cooke, Maxide, Knockout, Grant's, Over 'n Out	Central Garden & Pet	69,550	11.2
Bayer Advanced	SBM	40,500	6.5
Raid, Raid Max	SC Johnson	25,000	4.0
Safer, Poison-Free, Concern	Woodstream	22,500	3.6
Mosquito Dunks	Summit Chemical	13,500	2.2
Bonide	Bonide Chemical	10,200	1.6
Gordon's	PBI-Gordon	7,900	1.3
Ferti-lome	Voluntary Purchasing Group (VPG)	7,866	1.3
Surrender, Martin's, Protech	Control Solutions	5,670	0.9
Bengal	Bengal Products	5,360	0.9
Enforcer	Zep Inc.	4,725	0.8
Southern Ag	Southern Ag Insecticides	3,100	0.5
Andersons, Fortify	The Andersons	3,000	0.5
Milky Spore, Sharpshooter	St. Gabriel Organics	2,600	0.4
Monterey	Monterey	2,400	0.4
Earth-tone	Espoma	2,000	0.3
All other	-	20,000	3.5
Total		623,152	100.0

Figure 5A-2: Estimated U.S. Distribution of Consumer Outdoor Insecticides, 2016

Millions of marketers' dollars



The channel data shown in Figure 5A-2 reflect the number of respondents that purchase the product category in each type of outlet. This historical method does not take into account the impact of income differences on channel revenue. To account for that impact, beginning in 2003, this analysis used the respondents with incomes of more than \$50,000 a year to reflect the higher disposable incomes spent on lawn, garden, and home products, as well as larger lot sizes associated with these higher-income individuals. Both factors would tend to increase their spending per purchase. Kline & Company has not altered the tabulations shown in this section, but has used only the higher-income respondents to calculate distribution channel importance.

PROMOTION

Scotts' Ortho, Bayer Advanced (SBM), Central Garden & Pet, and to a lesser extent, Spectrum Brands are all supported by both general brand and specific product advertising. Kline estimates that the traceable media spending for the outdoor insecticide category is about \$12.0 million to \$16.0 million in 2016, although the actual spending may include indoor insecticides that cannot be separated from the data. However, most remaining suppliers conduct limited direct consumer advertising or none at all. Lawn insecticides that are marketed by fertilizer companies receive virtually no promotion because they are provided as a minor part of a line of turf-care products. Details of the spending are shown in the company profiles.

OUTLOOK

Sales in this product category over the past five years have grown slightly. The increases primarily come from higher prices and greater demand. Future growth appears promising due to consumers placing an increasing importance on keeping their yards insect-free, especially in light of the Zika virus and the West Nile virus creating concerns for many homeowners in certain parts of the country.

The increased offering of environmentally friendly pesticides, which may be slightly more expensive, will also drive growth in the category as older, more toxic pesticides are eliminated.

Government regulatory activity may limit future sales growth and profitability as increasing pressure is placed on existing insecticides used in this market. The potential loss of the widely used, inexpensive, and generic active materials could drive additional sales growth. In this category, as in several others in the consumer market, a striking commonality of active ingredients is used among major suppliers.

Marketers' sales of outdoor insecticides are projected to reach \$705.1 million in 2021, an average annual increase of 2.5%.

Table 5A-7: Outlook for Outdoor Insecticides to the U.S. Consumer Market, 2016-2021

Year	\$ Million	Average annual growth, %
2016	623.2	-
2021	705.1	2.5

5B. HOUSEHOLD AND HOUSEPLANT INSECTICIDES

Sales of household insecticides are estimated at \$504.7 million in 2016, a slight increase from \$494.4 million in 2011, an annual average rate of 0.4%. The small growth in this segment is attributable, in part, to an increase in the number of homeowners who are using pest control operators and, in the opinion of Kline & Company, the newer effectiveness of baits for both ant and cockroach control.

The following business development activity has occurred in this segment in the reporting period:

- In October 2016, SBM acquired Bayer Garden and Bayer Advanced businesses in both Europe and North America, and it has created a separate business unit named SBM Life Science to manage the consumer pesticide market. SBM Life Science has its headquarters in France and provides plant protection and home and garden care products.
- In 2015, Scotts acquired the assets of Action Pest Control, one of the major residential pest control providers in the Midwestern United States. The acquisition is in line with Scotts' long-term growth strategy.
- In 2015, Vestar Capital acquired Woodstream, which is now a portfolio company of Vestar. Vestar Capital is among the leading private-equity firms that specialize in management buyouts and growth equity investments. The consumer sector of Vestar consists of various portfolio companies that offer food products, apparel, household goods, and retail services.
- In 2014, Central Garden acquired certain assets of Envincio LLC, a wholly owned subsidiary of SantoLubes LLC. The acquisition enabled the company to be a major supplier and product innovator in the insecticides market.
- As of April 2012, Senoret Chemical Company was acquired by Woodstream Corporation.

New product introductions in the household insecticide segment include the following:

- In 2016, SC Johnson introduced Raid Bed Bug Detector & Trap, a new early-detection product that enables consumers to expose evidence of bed bugs prior to an infestation.
- In 2014, SC Johnson's Raid brand introduced the new Raid Defense System.
- In 2014, Central Garden & Pet introduced Bio Spot Active Care brand, a complete line of wellness products that provide flea and tick solutions for pet, home, and yard.

PRODUCT DESCRIPTION

Household insecticides are used to kill a variety of flying and crawling insects found in and around the home. Roaches, mosquitoes, ants, fleas, and flies are among the most frequently targeted species. Based on the length of time that they are effective, these products are divided into these two broad categories:

Nonresidual or space-spray insecticides kill on contact. The active ingredients used in these products decompose to nontoxic substances within a relatively short period of time, reducing the hazards of use near food, food preparation and serving surfaces, pets, and people. These products are generally low in toxicity to warm-blooded animals. They are typically sold as aerosols or pump sprays and are used for both flying and crawling insects.

Residual insecticides contain ingredients that remain active for a long time. They are usually applied to or placed on surfaces over which insects will pass, and are commonly formulated as liquids and aerosols. Baits and several others work by ingestion rather than on contact. Powders, gels, and other solids are also sold. Residual insecticides are used primarily to kill crawling insects, including roaches, ants, and silverfish.

This category also includes houseplant insecticides because that segment has declined to the point of being too small to track effectively. Houseplant insecticides are used on indoor and potted outdoor plants to control red spider mites, scales, aphids, white flies, mealybugs, and other pests. These products often contain pyrethrins, and are in similar formulation to household insecticides. Many consumers do, in fact, use household insecticides to treat occasional infestations of houseplants. This use of household insecticides is included in this chapter. Combination fertilizer-insecticide products are included in Section 3C, Houseplant Fertilizers.

THE MARKET

Marketers' sales

Marketers' sales of household insecticides are estimated at \$504.7 million in 2016, representing an annualized increase of 0.4%.

Table 5B-1: Sales of Household and Houseplant Insecticides to the U.S. Consumer Market, 1999-2016

Year-a	\$ Million	Average annual growth, %
1999	507.8	(3.7)
2001	537.6	2.9
2003	530.4	(0.7)
2005	525.1	(0.5)
2007	528.6	0.3
2009	544.3	1.5
2011	494.4	(4.7)
2016	504.7	0.4

a- This study was not conducted in 2000, 2002, 2004, 2006, 2008, 2010, 2012, 2013, 2014, or 2015.

Sales by region

Among the regions, the South accounts for the largest percentage of household insecticide sales in 2016, with more than 43.0% of the total. The other three regions are closely clustered with percentages of the market ranging from 17.0% to 20.0%.

Table 5A-2: Sales of Household and Houseplant Insecticides to the U.S. Consumer Market by Region, 2016

Region	\$ Million	% Of total
South	220.3	43.7
Northeast	101.6	20.1
North Central	97.0	19.2
West	85.8	17.0
Total	504.7	100.0

Product form

Aerosols have traditionally been the product of choice by homeowners for indoor insect treatments and are still important, but baits and RTUs are now used by significant numbers of homeowners.

Table 5A-3: Sales of Household and Houseplant Insecticides to the U.S. Consumer Market by Product Form, 2016

Product form	Million			% Of total		
	Lb	Gal	\$	Weight	Volume	Value
Aerosol	72.1	-	172.3	74	-	34.1
Bait	12.3	-	195.6	13	-	39.0
Liquid conc.	-	13.6	57.8	-	54	11.5
RTU	-	11.5	49.5	-	46	9.8
Fogger	3.3	-	4.2	3	-	0.8
All other-a	9.5	-	25.3	10	-	5.4
Total	97.2	25.1	504.7	100	100	100.0

a- Includes water-soluble powders, granules, dusts, and pest strip products.

Active ingredients

Active ingredients in household insecticides commonly constitute 1.0% or less of total product weight. Powders based on boric acid are the major exception--these products can have up to 99.0% active ingredient in composition, thus increasing the amount of active ingredient consumed by residual toxicants. Pyrethroids now account for a significant amount of the active ingredient consumption, due to their high degree of mammalian safety and the recent development of improved versions. Insect growth regulators (IGRs), natural pyrethrum, and hydramethylnon account for most of the remainder. Hydramethylnon's use has declined in the bait area and has been replaced by fipronil.

Table 5A-4: Sales of Household and Houseplant Insecticides to the U.S. Consumer Market by Active Ingredient, 2016

Active ingredient	Thousand lb	% Of total
Pyrethroids-a	89.1	6.8
Residual toxicants-b	1,203.0	91.4
Pyrethrum	17.1	1.3
IGRs-c	3.4	0.3
Hydramethylnon	1.1	0.1
Fipronil	2.3	0.2
Total	1,316.0	100-d

a- Includes d-trans Allethrin, permethrin, tetramethrin, lambda-cyhalothrin, imiprothrin, cypermethrin, deltamethrin, prallethrin, Zeta-cypermethrin, other pyrethroids.
b- Includes boric acid, carbaryl and abamectin, among others.
c- Primarily methoprene and hydroprene.
d- Does not add due to rounding.

Private-label activity

Private-label products are not an important factor in this product category. There is relatively little difference in price between private-label and branded products, other than the most premium-priced lines. Branded products receive substantial advertising support. Sales of private-label products are estimated at less than 5.0% of total sales in 2016. Contract manufacturing, in contrast, is quite significant because many suppliers subcontract the production of aerosols.

PRICES AND MARGINS

Retail margins for household insecticides range from 25.0% to 35.0%, although retailers may take lower margins during special promotions. Baits and aerosols generally have the highest margins.

Table 5B-5. Retail Prices of Selected Consumer Household and Houseplant Insecticides in the United States, 2016

Brand	Marketer	Form	Size	Retail price, \$
Bayer Advanced Home Pest Control RTU	Bayer	Liquid	1 gal	10.47
Bayer Advanced Home Pest Insect Killer	Bayer	Aerosol	15 oz	8.37
AMDRO Kills Ants	Central Garden & Pet	Bait	4 x .16 oz	2.97
Combat Max Roach Gel	Dial Corp.	Gel	1.05 oz	5.99
Combat Roach Killing Gel (one applicator)	Dial Corp.	Gel	0.95 oz	4.97
Combat 12-month Roach Killing Bait	Dial Corp.	Bait	18 pack	10.99
Raid Ant Baits III	SC Johnson	Bait	4 pack	3.32
Raid Ant & Roach Aerosol	SC Johnson	Aerosol	17.5 oz	3.89
Raid Flying Insect Killer Aerosol	SC Johnson	Aerosol	15 oz	4.47
Raid Concentrated Deep Reach Fogger	SC Johnson	Fogger	3 X 1.5 oz	6.77
Raid Max Bug Barrier	SC Johnson	Liquid	1 gal	15.97
Ortho Home Defense MAX Perimeter & Indoor Insect Killer RTU	Scotts	Liquid	1 gal	7.97
Ortho Home Defense Bed Bug, Flea & Tick Killer	Scotts	Liquid	½ gal	14.97
Hot Shot Indoor Fogger	Spectrum Brands	Aerosol	3 x 2 oz	6.28
Hot Shot MaxAttrax Roach Killing Powder	Spectrum Brands	Dust	1 lb	3.13
Real Kill Ant & Roach Killer 2	Spectrum Brands	Aerosol	20.8 oz	4.99
Real Kill Indoor Fogger	Spectrum Brands	Aerosol	6 x 2 oz	8.98
Hot Shot Ant & Roach Gel	Spectrum Brands	Gel	2.5 oz	6.88
Hot Shot Kitchen Bug Killer Botanical	Spectrum Brands	Aerosol	14 oz	1.97
TERRO Ant Killer	Woodstream	Liquid	2 oz	4.17
Safer Ant & Crawling Insect Killer	Woodstream	Dust	7 oz	7.48

PACKAGING

Aerosol products are packaged in metal canisters ranging in size from 5 oz to 32 oz. RTU pump sprays are sold in plastic bottles from 12 oz to 128 oz. Other liquids are sold in 1 pt to 1.33 gal (5 liter) containers. Bait trays or stations are plastic units typically packaged three to twelve to a box. Foggers are also sold in multiple-unit packages, usually two or three to a set. Baited traps are sold in small plastic stations with pre-drilled holes.

COMPETITION

SC Johnson held approximately 36.0% of the household/houseplant insecticide market in 2016 and is the largest marketer of household insecticides in the United States. Spectrum Brands ranks second, with 29.7%, followed by Scotts at 12.4%. The remainder of the market is fragmented among many smaller suppliers.

Figure 5B-1: U.S. Sales of Consumer Household and Houseplant Insecticides by Major Marketer, 2016

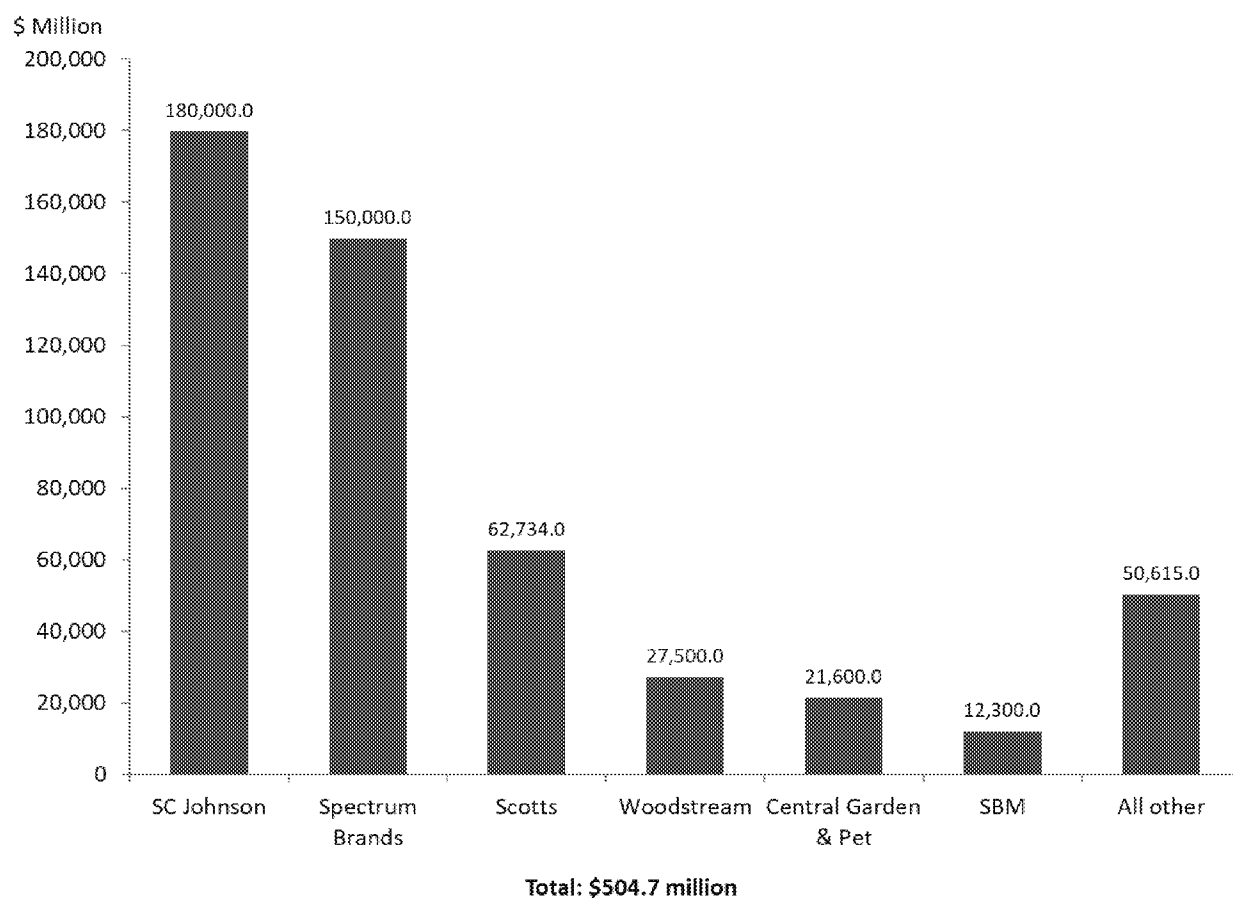


Table 5B-6: U.S. Sales of Consumer Household and Houseplant Insecticides by Major Marketer, 2016

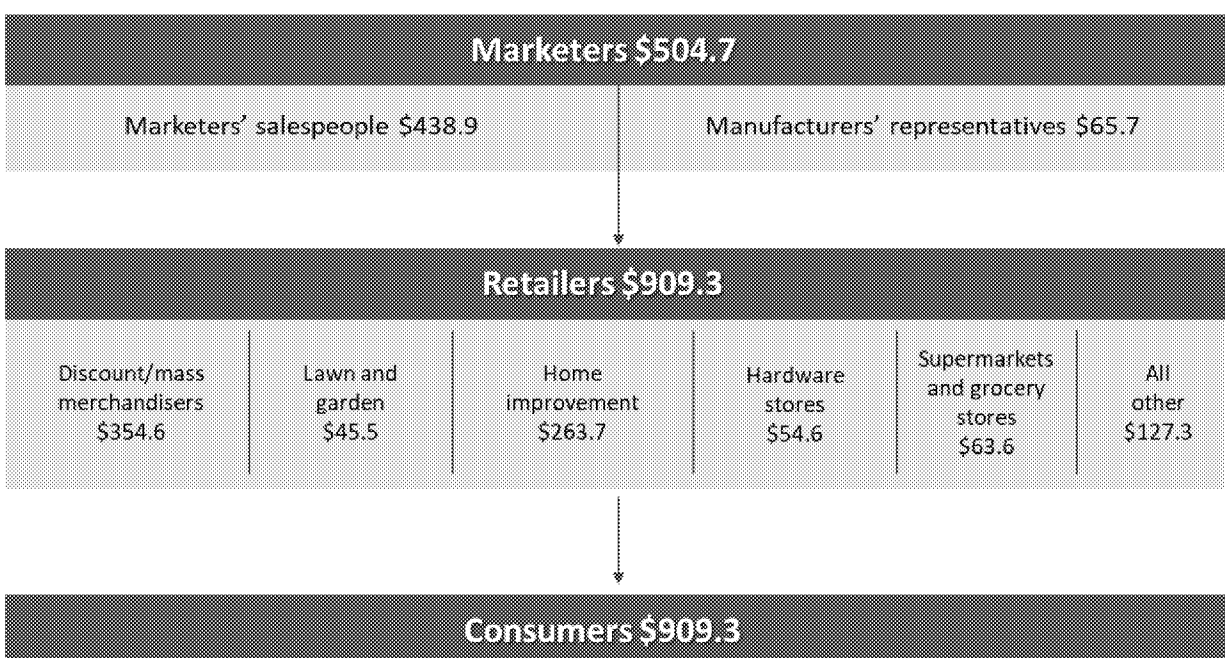
Brand(s)	Company	\$ Thousand	% Of total
Raid, Raid Max	SC Johnson	180,000	35.7
Terminate, Hot Shot, Bug Stop, Spectracide, Schultz, Black Flag	Spectrum Brands	150,000	29.7
Ortho	Scotts	62,734	12.4
Safer, Poison-Free	Woodstream	27,500	5.4
Grant's, Zodiac, Farnam	Central Garden & Pet	21,600	4.3
Bayer Advanced	SBM	12,300	2.4
Combat, Combat Superbait	Dial Corporation	8,500	1.7
Eagles-7, My Buddy	Bacon	5,800	1.1
AntMax, BugMax	Zep, Inc	4,725	0.9
Bengal	Bengal Products	4,720	0.9
PIC	PIC	2,740	0.5
Martin's	Control Solutions	2,380	0.5
Bonide	Bonide	1,500	0.3
Answer Boric Acid	J.T. Eaton & Company	950	0.2
All other	-	20,000	4.0
Total		504,749	100.0

DISTRIBUTION CHANNELS

Marketers' salespeople accounted for approximately 87.0% of total sales in 2016, with the remainder sold by manufacturers' representatives and food brokers. Mass merchandise stores account for an estimated 39.0% of sales at the retail level. Home improvement centers account for 29.0%, followed by supermarkets and grocery stores with 7.0%.

Figure 5B-2: Estimated U.S. Distribution of Consumer Household and Houseplant Insecticides, 2016

Millions of marketers' dollars



The channel data shown in Figure 5B-2 reflect the number of respondents that purchase the product category in each type of outlet. This historical method does not take into account the impact of income differences on channel revenue. To account for that impact, this analysis used the respondents with incomes of more than \$50,000 a year to reflect the higher disposable incomes spent on lawn, garden, and home products. This would tend to increase their spending per purchase. Kline & Company has not altered the tabulations shown in this section, but has used only the higher-income respondents to calculate distribution channel importance.

PROMOTION

Household insecticides continue to be promoted, but at a much lower rate than in previous years. This market's customers are not brand loyal and are prone to switch products as their needs change. In order to keep customers within the supplier's lines, promotions are aimed at differentiating brands from each other and encouraging supplier loyalty. "Green" lines of products are moving to the forefront, as advertisements that focus on natural active ingredients are becoming more prevalent. Furthermore, new brands have been invented recently that combine insecticides with odor control and/or germ control. The ongoing push toward more green products and packaging can help this market portray its products as "new and improved" to maintain excitement, buzz, and word-of-mouth mentions.

OUTLOOK

Recent years have brought lower sales and tighter margins to household insecticide suppliers. The “green” evolution of the market and its related new products and packaging will help keep this market’s products relevant. Sales are predicted to increase slightly in the near future, reaching \$525.2 million in 2021, an average annual increase of 0.8%.

Table 5B-7: Outlook for Household and Houseplant Insecticides to the U.S. Consumer Market, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	504.7	-
2021	525.2	0.8

5C. PET INSECTICIDES

The pet insecticides (flea and tick control) market reaches manufacturers' sales of \$1,473.4 million in 2016, an annualized growth rate of 3.9% over 2011 sales of \$1,217.5 million.

The original three "new-generation" flea and tick products were distributed exclusively through veterinarians and were introduced in the late 1990s. They were Program/Sentinel from Novartis (1995), Advantage from Bayer (1996), and Frontline from Merial (1996). Based on the active ingredient lufenuron, Program and Sentinel were the first medications introduced. They are once-a-month treatments--an orally administered pill for dogs and a liquid suspension either injected or mixed with wet food for cats--that prevent flea eggs from hatching. Lufenuron does not kill adult fleas or ticks. Advantage, introduced the following year, is based on the active ingredient imidacloprid, and controls both the flea egg and adult stages. Packaged in a small vial, it is applied once a month by squeezing the material onto the shoulder blade area of the dog or on the neck of the cat. Frontline, also in a spot-on formulation, is based on fipronil, and controls both fleas and ticks. Frontline Plus, introduced into the North American market in 2001, contains both fipronil and methoprene and offers protection against all flea life stages for cats and dogs.

Between 2000 and 2006, six active ingredients were removed from the market: chlorpyrifos, dichlorvos, phosmet, naled, diazinon and malathion. Two others are receiving negative press and may be a focus for the EPA going forward. One is the active ingredient tetrachlorvinphos (TCVP) and the other is propoxur. The main issue is the human contact with these topically applied pet insecticides, which can result in illness, especially in children.

In March 2010, the EPA and FDA jointly investigated reasons behind a large increase in the number of negative experiences of pets from spot on flea and tick products. After nine months of discovery and analysis, it was determined that labels needed clarification, especially regarding cat/dog interaction after application and the quantities administered to smaller animals. In addition, inert ingredient sensitivities leading to some incidents and time-sensitive registrations requiring constant evaluation were needed. Additional changes were required on a product by product basis. No products were restricted, and the industry greeted the changes positively.

Since the first three of these products emerged, Pfizer introduced its heartworm, ear mite, and tick product, Revolution, into the veterinary channel. In addition, Novartis introduced a daily pill-form flea product based on the active ingredient nitenpyram under the brand name Capstar. It is used up to once daily to kill fleas on an as-needed basis. In 2003, Bayer launched K9 Advantix, a once-a-month topical application containing imidacloprid and permethrin for use against mosquitoes, ticks, and fleas in North America. Recent changes in the flea and tick market segment include the introduction of numerous over-the-counter (OTC) spot-on flea and tick products sold through traditional retail channels.

The following business activity has taken place in this segment since the 2012 edition of this report was published:

- In 2012, Perrigo acquired Sergeant's Pet Care Products, Inc., the privately held OTC pet care business. The acquisition expands Perrigo's portfolio to include a new adjacent product category, companion animal healthcare. As per the agreement, Perrigo acquired all of Sergeant's assets for \$285.0 million.
- In 2013, Zoetis, the former animal health business of Pfizer, Inc., became fully independent with the acceptance of Pfizer shares tendered in an exchange offering.
- In April 2014, Elanco acquired Novartis Animal Health and Lohmann Animal Health business to increase its animal, livestock, and aquaculture offerings. The \$5.4 billion deal created the world's second largest animal health company. Elanco subsequently sold the U.S. rights on trademarks, marketing, patents, and other assets related to Sentinel Flavor Tabs and Sentinel Spectrum products to Virbac, as noted below.
- In October 2014, Virbac entered into an agreement with Elanco to acquire veterinary products that were earlier marketed by Novartis Animal Health. Under the agreement, Virbac acquired rights for the United States on trademarks, marketing, patents, and other assets related to Sentinel Flavor Tabs and Sentinel Spectrum, major parasiticides for dogs.
- In 2015, Merck Animal Health acquired Harrisvaccines, a company that manufactures vaccines for food production and companion animals. By combining the Harrisvaccines's R&D and product portfolio, Merck aims at addressing the most severe diseases impacting animals.
- In March 2015, Merck Animal Health and China Animal Husbandry Industry entered into a partnership, wherein both companies will share scientific and commercial expertise and explore animal health vaccine opportunities in China.
- In October 2016, Elanco announced an agreement to acquire Boehringer Ingelheim Vetmedica, Inc.'s U.S. feline, canine, and rabies vaccines portfolio. The deal includes a fully integrated manufacturing and R&D site for \$885.0 million, including the estimated cost of acquired inventory.

Product developments include the following:

- In July 2016, Merck received the U.S. Food and Drug Administration's approval of Bravecto, a treatment for fleas and ticks in cats and dogs. A single dose of Bravecto is effective for up to 12 weeks. Bravecto products are available only through licensed veterinarians.
- In February 2016, Zoetis announced that the FDA approved Simparica (sarolaner) Chewables to kill adult fleas and prevent flea infestations, as well as treat and control tick infestations due to the Lone Star tick, the Gulf Coast tick, the American dog tick, and the brown dog tick.
- In March 2014, Central Garden and Pet introduced Bio Spot Active Care brand, a complete line of wellness products that provide flea and tick solutions for pet, home, and yard.
- In 2013, Elanco launched Cheristin for Cats, a once-a-month topical solution for the prevention and treatment of flea infestations. The product lasts for a full month, providing greater than 99.0% flea control throughout the month.

PRODUCT DESCRIPTION

Pet insecticides are used to control and prevent flea, tick, and ear mite infestations in dogs and cats, with products formulated to kill fleas accounting for the majority of product use. These insecticides are available as collars and collar tags, shampoos, powders, on-animal sprays, dips, spot-on treatments, and veterinary medications. Most manufacturers also market “off-animal” or premise-control products designed to kill insects in the pet’s environment, both indoors and out. Tick repellents for pets are included in this product category. Some overlap occurs between the pet insecticides, household insecticides, and outdoor insecticides product categories.

THE MARKET

Marketers’ sales

Sales of pet insecticides are estimated at \$1,473.4 million in 2016 at the marketers’ level (before distributor and retailer markups), representing an annualized increase of 3.9% from sales of \$1,217.5 million in 2011.

Table 5C-1: Sales of Pet Insecticides to the U.S. Consumer Market, 1999-2016

Year-a	\$ Million	Average annual growth, %
1999	771.1	11.5
2001	793.9	1.5
2003	807.0	0.8
2005	932.3	7.5
2007	1,066.7	7.0
2009	1,042.1	(1.2)
2011	1,217.5	8.1
2016	1,473.4	3.9

a- This study was not conducted in 2000, 2002, 2004, 2006, 2008, 2010, 2012, 2013, 2014, and 2015.

Sales by region

Broken out by region, the South accounts for the largest percentage of sales of pet insecticides in 2016, followed by the North Central and Northeast.

Table 5C-2: Sales of Pet Insecticides to the U.S. Consumer Market by Region, 2016

Region	\$ Million	% Of total
South	590.8	40.1
North Central	363.9	24.7
Northeast	299.2	20.3
West	219.5	14.9
Total	1,473.4	100.0

Product form

Liquid products continue to represent more than 80.0% of the market in 2016, as the topical spot-on/vet medications continue to dominate the flea and tick control market. Due to fipronil's now generic status, new fipronil products have allowed other companies to launch competitive products into this market. Tablets for veterinary use rank second with 12.7% of sales, as several new products have come onto the market recently.

Table 5C-3: Sales of Pet Insecticides to the U.S. Consumer Market by Product Form, 2016

Product form	Million			% Of total		
	Lb	Gal	\$	Weight	Volume	Value
Liquids-a	-	6.6	1,188.8	-	100.0	80.7
Tablets	-	-	187.1	-	-	12.7
Collars	2.2	-	68.7	39.3	-	4.6
Powders	0.8	-	7.3	14.3	-	0.5
All other-b	2.6	-	21.5	46.4	-	1.5
Total	5.6	6.6	1,473.4	100.0	100.0	100.0

a- Shampoos, dips, and topical spot-on/vet medications.
b- Primarily aerosols, foggers, soaps, combs, and traps.

Active ingredients

As with other markets for insecticides, there is a movement toward finding and using safer alternatives to collars, foggers, and powders with active ingredients that are toxic to humans and have delivery methods that increase the possibility of fairly high contact with humans. Spot-on treatments and tablets are heading to the fore and are now competing for a large piece of the market. Because these products are used in very small amounts, their active ingredient pounds are not representative of their sales' share. Pyrethrin, used in shampoos, powders, and sprays, is one of the leading active ingredients in terms of volume. The remaining balance of the estimated 430,000 pounds of active ingredients in 2016 include fipronil, imidacloprid, nitenpyram, selamectin, naled, permethrin, S-methoprene, amitraz, d-Trans allethrin, deltamethrin, afoxolaner, etofenprox, moxidectin, fluralaner, spinosad, and milbemycin.

Private-label activity

Private-label products are not a significant factor in this category and are estimated to represent less than 5.0% of marketers' sales in 2016. Flea collars and aerosols are the products most commonly made under private label.

PRICES AND MARGINS

Prices and margins for pet insecticides can vary significantly by brand and retail outlet. Supermarket and grocery chain margins are usually lowest, averaging between 25.0% and 30.0%. Veterinary and pet store margins are highest, typically averaging between 50.0% and 60.0%.

Table 5C-4: Retail Prices of Selected Consumer Pet Insecticides in the United States, 2016

Brand	Marketer	Form	Size	Retail price, \$
Advantage for Dogs 21-55 lb	Bayer	Tablet	4 pack	48.99
Bio Spot Flea & Tick Collar for Dogs	Farnam	Liquid	0.6 oz	7.99
Bio Spot for Large Dogs, 31-60 lb	Farnam	Liquid	3 x 3 ml	9.99
Capstar Flea medicine for Dogs 2-25 lb	Novartis	Tablets	6 pack	34.99
Frontline Plus Large Dogs 45-88 lb	Merial	Liquid	12 pack	119.49
Hartz InControl Advanced Flea & Tick Drops for Dogs	Hartz Mountain	Liquid	3 pack	14.99
Hartz Ultra Guard Home Flea & Tick Fogger	Hartz Mountain	Aerosol	6 oz	5.99
K9 Advantix 100 (for dogs over 55 lb)	Bayer	Liquid	4 x 4.0 ml	58.50
Program Flavor Tabs 21-45 lb	Novartis	Tablets	6 pack	64.99
Revolution for Cats 5.1-15 lb	Pfizer	Liquid	6 pack	91.98
Revolution for Dogs 20.1-40 lb	Pfizer	Liquid	6 pack	94.98
Revolution for Puppies and Kittens	Pfizer	Liquid	3 pack	45.99
Sentinel Flavor Tabs Dogs 26-50 lb	Novartis	Tables	6 pack	79.50
Sentry Natural Defense Flea & Tick Household Spray	Sergeant's	Aerosol	12 oz	18.99
Sentry Natural Defense Flea & Tick Squeeze-On for Dogs 15-40 lb	Sergeant's	Liquid	3 pack	14.99
Vet-Kem Breakaway Flea & Tick Collar for Cats	Central Garden & Pet	Collar	0.6 oz	8.59
Zodiac Carpet Powder	Central Garden & Pet	Powder or dust	1 lb	13.99
Zodiac FleaTrol Flea & Tick Collar for Small Dogs, Neck up to 15 inches	Central Garden & Pet	Collar	1.2 oz	5.99
Zodiac FleaTrol Fogger	Central Garden & Pet	Aerosol	3 pack	12.99
Zodiac FleaTrol Spot On 1-2-3 Complete Solution for Dogs 30-60 lb	Central Garden & Pet	Liquid	4 pack	11.99
Advantage for Dogs 21-55 lb	Bayer	Tablet	4 pack	48.99
Bio Spot Flea & Tick Collar for Dogs	Farnam	Liquid	0.6 oz	7.99

PACKAGING

The packaging of pet insecticides is relatively simple. Collars are packaged in Mylar or polyethylene bags that are contained in paperboard boxes. Shampoos are packaged in bottles, normally made of plastic, ranging in size from 4 oz to 64 oz. Dips are generally packaged in glass or plastic bottles ranging in size from 1 oz to 4 oz of concentrate. Powders are packaged in paperboard canisters with perforated tops, and foams in metal cans. Spray products are most commonly packaged as 4 oz to 8 oz aerosols and 6 oz to 12 oz pump sprays. Spot-on treatments are packaged in plastic vials.

COMPETITION

The veterinary-distributed flea and tick products continue to dominate sales of pet insecticides. Merial continues to hold the top share with its Frontline product commanding more than 37.0% of total sales. Bayer ranks second with a share of approximately 16.0%, and Hartz, which dominated sales of pet insecticides in past years, ranks third with 15.0% of total sales. Both Novartis and Pfizer have dropped out of this market segment.

Figure 5C-1: U.S. Sales of Consumer Pet Insecticides by Major Marketer, 2016

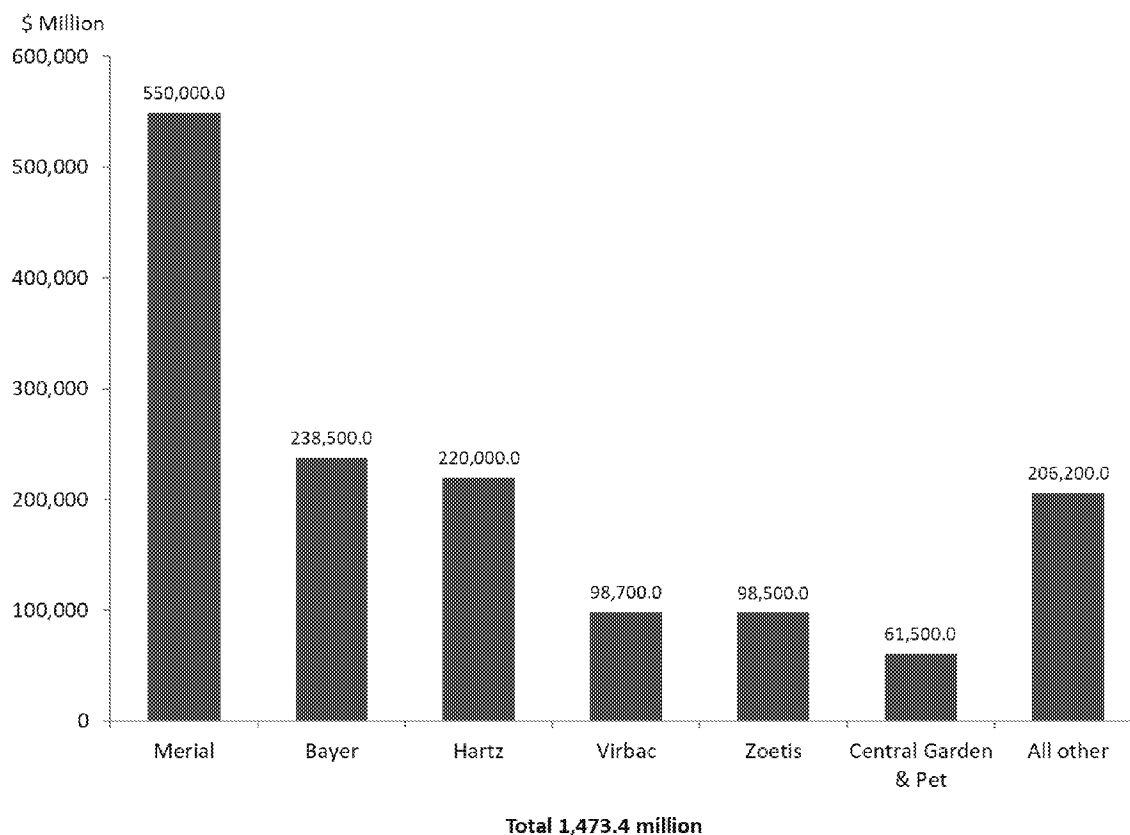


Table 5C-5: U.S. Sales of Consumer Pet Insecticides by Major Marketer, 2016

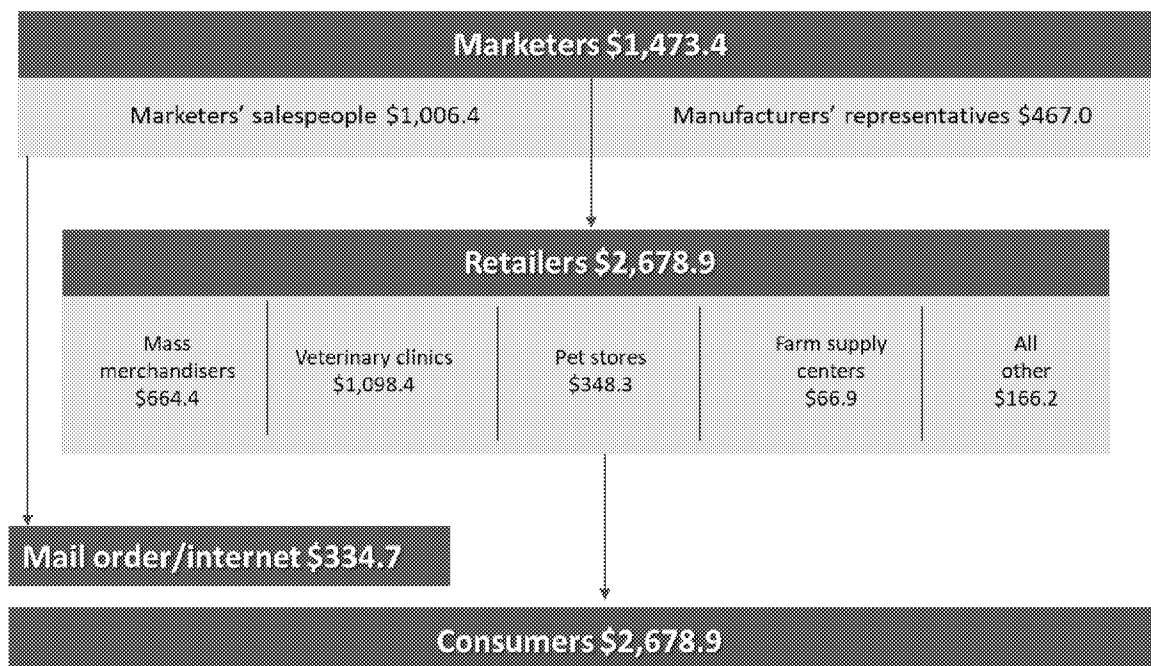
Brand	Company	\$ Thousand	% Of total
Frontline, NexGard	Merial	550,000	37.3
Advantage, K9 Advantix, Seresto	Bayer	238,500	16.2
Hartz, Ultraguard, InControl	Hartz Mountain	220,000	14.9
Program, Sentinel, Capstar	Virbac	98,700	6.7
Revolution, Stronghold, Simparica	Zoetis	98,500	6.7
Zodiac, Four Paws, Bio Spot, Adams, Scratchex, Sulfodene	Central Garden & Pet	61,500	4.2
Sentry, Sentry Pro, PetArmor	Perrigo	29,000	2.0
Bravecto, Activyl, Scalibor	Merck	28,000	1.9
Trifexis, Comfortis, Cheristin, Parastar, EasySpot, Capstar	Elanco	22,000	1.5
All other-a	-	126,700	8.6
Total		1,473,400	100.0
a- Includes Spectrum Brands, Control Solutions, and Zep, among others.			

DISTRIBUTION CHANNELS

There is a push by suppliers to increase retail availability of their products. However, with regulations in place, approximately 75.0% of the total sales dollars of pet insecticides are veterinary medications, and the various retail products account for the remainder. About 40.0% of respondents earning \$50,000 or more annually reported that they purchase their pet insecticides through veterinarians. The higher price of vet medications means those purchases help to raise the dollar sales total for pet insecticide sales. Mass merchandisers and farm supply stores are still important, but the drugstore and supermarket category continues to drop off. Pet super stores are increasing in importance, and their strong online presence gives them a slight nudge over the other online marketers such as Drs. Foster & Smith and 1-800-PetMeds which continue to grow in strength.

Figure 5C-2: Estimated U.S. Distribution of Consumer Pet Insecticides, 2016

Millions of marketers' dollars

**PROMOTION**

Total traceable media expenses for pet insecticides by the companies profiled in this report are estimated at \$92.0 million in 2016. Merial, the largest supplier of pet insecticides, continues to spend the largest amount on promotion to advertise Frontline and Frontline Plus. Bayer continues to rank second in advertising expenditures to support Seresto and K9 Advantix II. Television advertising represented nearly 80.0% of the traceable spending by both Merial and Bayer, with the remainder spent for magazine ads.

Promotional practices by the majority of other manufacturers in this product category are directed toward distributors and retailers through trade journals, trade shows, and cooperative advertising programs. These approaches are particularly true of smaller suppliers whose products are marketed primarily to pet stores.

The channel data in Figure 5C-2 reflect the number of respondents that purchase the product category in each type of outlet. This historical method does not take into account the impact of income differences on channel revenue. To account for that impact, since 2003, this analysis uses the respondents with incomes of more than \$50,000 a year to reflect the higher disposable incomes spent on lawn, garden, pet, and home products. Both factors would tend to increase their spending per purchase. Kline & Company has not altered the tabulations shown in this section, but has used only the higher-income respondents to calculate distribution channel importance.

OUTLOOK

In the last decade, the growth of pet ownership has occurred at a faster rate than growth in the number of households, and more households have more than one pet. Millennials, roughly defined as the generation born between 1980 and 2000, like the idea of having a pet as a way of getting ready to have a family.

As with other insecticide markets, movement toward more natural active ingredients will create some change in the product mix as we move forward. With these changes in mind, consistent growth is anticipated, but at a continued moderate pace. Estimated marketers' sales of pet insecticides are projected to grow at 2.5% annually until the year 2021, resulting in a total market size of \$1,667.0 million.

Table 5C-6: Outlook for Pet Insecticides to the U.S. Consumer Market, 2016-2021

Year	\$ Million	Average annual growth, %
2016	1,473.4	-
2021	1,667.0	2.5

5D. INSECT REPELLENTS

Insect repellent sales increase to \$410.8 million in 2016, an average annual increase of 3.4% from sales of \$347.9 million in 2011. This growth continues to be a function of greater consumer awareness, due largely to the need and perceived need for protection against mosquitoes carrying West Nile virus and/or Zika virus, along with the addition of insect repellent products such as OFF! Clip-On and others.

The following business activity and product introduction occurred within the repellents segment during the reporting period:

- As of April 2012, Senoret was acquired by Woodstream Corporation, and will operate as a subsidiary.
- PIC recently launched Bugables Mosquito Repellent Stickers and Twist-It Mosquito Repeller.
- Cutter has introduced a new line of repellents and outdoor sprays under the line Cutter Natural, based on natural oils such as eucalyptus and lemon.
- SC Johnson has been involved in donating OFF! mosquito repellent for the U.S. territories, aimed at protecting people from the Zika virus. In March 2016, SC Johnson donated more than 60,000 cans and bottles of OFF! insect repellent to the Centers for Disease Control and Prevention (CDC) Foundation.
- Lamplight Farms introduced the innovative product TIKI Brand BiteFighter Torch Fuel, a product that provides mosquito repellency.

PRODUCT DESCRIPTION

Insect repellents ward off mosquitoes, flies, gnats, ticks, fleas, chiggers, and other blood-sucking insects and deter them from biting. Current research suggests that they work by interfering with the insects' ability to detect prey. Repellents are not effective against bees, wasps, ants, and other stinging insects. They are available in aerosol spray, non-aerosol pump spray, solid stick, lotion (cream and liquid), and towelette form, and for premises, in coil or torch form.

THE MARKET

Marketers' sales

In 2016 marketers' sales of insect repellents are estimated at \$410.8 million in the United States, an average annual increase of 3.4% from sales of \$347.9 million in 2011.

The 1990s were a relatively stable growth period for this market segment, which experienced unfavorable weather conditions in the 1980s, followed by the 1990 cancellation of R-11, a secondary active ingredient found in several formulations, particularly aerosols. Sales showed signs of a strong recovery in 1991 and have continued to grow at an attractive pace since then. More recently, the fear of West Nile virus, Zika virus, and to a lesser extent, chikungunya and dengue fever has increased consumers' awareness and subsequent use of repellent products.

Table 5D-1: Sales of Insect Repellents to the U.S. Consumer Market, 1999-2016

Year-a	\$ Million	Average annual growth, %
1999	122.6	7.0
2001	138.2	6.2
2003	177.5	13.3
2005	214.4	9.9
2007	308.7	20.0
2009	325.6	2.7
2011	347.9	3.4
2016	410.8	3.4

a- This study was not completed in 2000, 2002, 2004, 2006, 2008, 2010, 2013, 2014, or 2015.

Sales by region

Among the regions, the South accounts for the largest percentage of insect repellent sales in 2016, with approximately 36.0% of the total. The North Central region ranks second with just less than 30.0%, while each of the other two regions account for less than 20.0% of the total.

Table 5D-2: Sales of Insect Repellents to the U.S. Consumer Market by Region, 2016

Region	\$ Million	% Of total
South	150.4	36.6
North Central	119.5	29.1
West	72.3	17.6
Northeast	68.6	16.7
Total	410.8	100.0

Product form

Aerosols are the most important product form purchased in 2016, accounting for approximately 53% of sales. Liquid products, including lotions, pump sprays, and roll-ons, collectively, rank second, accounting for 43.2%.

Table 5D-3: Sales of Insect Repellents to the U.S. Consumer Market by Product Form, 2016

Product form	Million			% Of total		
	Lb	Gal	\$	Weight	Volume	Value
Aerosols	16.7	-	217.4	93.3	-	52.9
Towelettes	1.2	-	15.8	6.7	-	3.9
Liquids-a	-	1.9	177.6	-	100	43.2
Total	17.9	2.3	410.8	100.0	100.0	100.0

a- Includes lotions, pump sprays, oils, and roll-ons.

Active ingredients

DEET has been the primary active ingredient in insect repellents for many years. First isolated by the U.S. Department of Agriculture (USDA) during research on insect repellents for the U.S. military, DEET has been in widespread use since the 1950s. It is an oily, somewhat sticky liquid with a distinctive smell. Concentrations typically range from 7.0% up to 30.0% in products intended for the backyard or family segment of the market, and from 50.0% to 100% in products targeted at the outdoorsman or sporting segment of the market. Picaridin has replaced DEET in several insect products, but has not gained widespread acceptance because it does not last as long on the skin as DEET-based products. Developed by Bayer, picaridin is prepared at rates from 5.0% to 20.0%, depending on the formulation and is a colorless and low-odor active ingredient. It has been included in some products, including Avon Bug Guard. IR3535 was introduced by Avon and is currently in several different products within the Skin So Soft Bug Guard line. IR3535 has been available in Europe for the last 20 years, but was only introduced in the United States in 1999. The EPA has classified IR3535 as a biopesticide.

Permethrin is also used, but this active ingredient constitutes neither a repellent nor a major part of the market. Permethrin is a true insecticide and is labeled only for application to clothing as a repellent, not to skin. Insect repellents based on citronella or other natural oils have been developed.

Total consumption of active materials is estimated at 14.0 million lb in 2016, with DEET still accounting for the majority of the total.

Table 5D-4: Sales of Insect Repellents to the U.S. Consumer Market by Active Ingredient, 2016

Active ingredient	Million lb	% Of total
DEET	7.6	54.3
IR3535	2.0	14.3
Picaridin	1.3	9.3
Eucalyptus	0.9	6.4
Citronella	0.9	6.4
All other-a	1.3	9.3
Total	14.0	100.0
a- Includes permethrin, various natural oil extracts, and a variety of other repellents.		

Private-label activity

Private-label products are not a significant factor in this category because of the dominance of the major suppliers, which formulate their own products. Private-label products are estimated to represent less than 5.0% of marketers' sales.

PRICES AND MARGINS

Retail margins for insect repellents typically range from 35.0% to 40.0%.

Table 5D-5: Retail Prices of Selected Consumer Insect Repellents in the United States, 2016

Brand	Marketer	Form	Size, oz	Retail price, \$
Ultrathon Insect Repellent	3M	Aerosol	6 oz	6.38
Skin So Soft Bug Guard Plus with IR3535	Avon	Lotion	3 x 4.00	23.95
Skin So Soft Bug Guard with Picaridin	Avon	Pump	4.00	9.89
Deep Woods OFF! Unscented	SC Johnson	Aerosol	6 oz	6.38
Deep Woods OFF! Dry	SC Johnson	Aerosol	2.50	3/97
Deep Woods OFF! Spritz	SC Johnson	Pump	6 oz	5.50
OFF! Family Care Smooth & Dry	SC Johnson	Aerosol	4 oz	5.89
OFF! Family Care Insect Repellent	SC Johnson	Pump	6.00	6.73
OFF! Tabletop Citronella Candle	SC Johnson	Candle	23 oz	6.38
OFF! Active Insect Repellent Sweat Resistant	SC Johnson	Aerosol	9 oz	6.64
OFF! Botanical Towelettes	SC Johnson	Wipes	32 ea	17.89
OFF! Mosquito Lamp	SC Johnson	Lamp	2 pack	11.39
OFF! Mosquito Lamp refills	SC Johnson	Lamp refill	2 pack	7.59
OFF! Clip-On Mosquito Repellent Starter Kit	SC Johnson	Kit	1 ea	6.78
OFF! Mosquito Coil Patio & Deck w/6 refills	SC Johnson	Coil	6 ea	4.74
Cutter Dry Mosquito Insect Repellent	Spectrum Brands	Aerosol	4 oz	4.97
Cutter Backwoods Insect Repellent	Spectrum Brands	Pump	2 x 6 oz	5.87
Cutter Dry Insect Repellent	Spectrum Brands	Aerosol	4 oz	4.97
Cutter Natural Insect Repellent	Spectrum Brands	Pump	6.00	4.98
Cutter Skinsations Insect Repellent Spray	Spectrum Brands	Pump	6.00	4.47
Cutter Insect Repellent Mosquito Wipes	Spectrum Brands	Wipes	15 ea	3.57
Repel Clothing & Gear Insect Repellent	Spectrum Brands	Aerosol	6.5 oz	4.97

PACKAGING

Aerosols are sold in metal canisters that typically range in size from 6 oz to 12 oz. Pump sprays are packaged in plastic bottles that usually hold from 1 oz to 6 oz of product. Lotions are sold in plastic squeeze or dropper bottles in 1 oz and 2 oz sizes. Towelettes are packaged in plastic containers containing 12 to 20 individual towelettes.

COMPETITION

SC Johnson now controls almost 54.0% of the market with its OFF! family of products. Avon, with its Skin So Soft Bug Guard family of products, ranks second with 16.5%, followed by Spectrum Brands with 10.5% of total sales in 2016. Lamplight Farms' citronella-based products account for approximately 9.9%. A number of small companies account for the remainder.

Figure 5D-1: U.S. Sales of Consumer Insect Repellents by Major Marketer, 2016

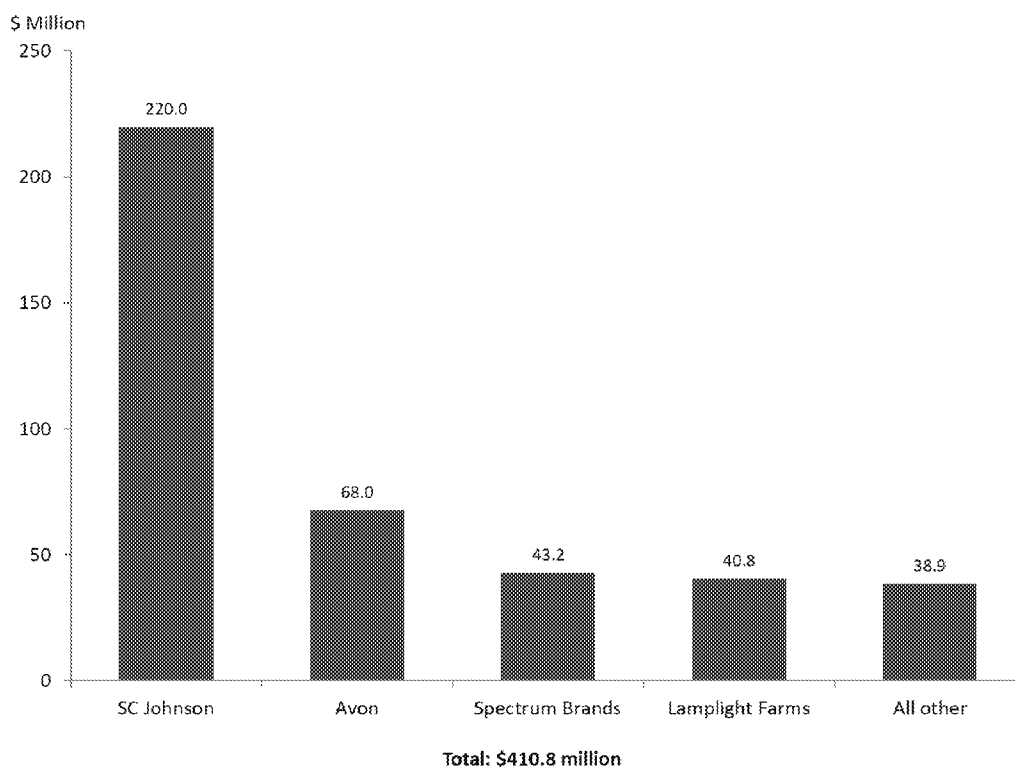


Table 5D-6: U.S. Sales of Consumer Insect Repellents by Major Marketer, 2016

Brand	Company	\$ Thousand	% Of total
OFF!, Deep Woods, Familycare, Active, Clip-On, Tabletop, Mosquito Lamp, Backyard, and Patio & Deck	SC Johnson	220,000	53.5
Skin So Soft, Bug Guard	Avon	68,000	16.5
Cutter, Backwoods, All Family, Dry, Skinsations, and Sport	Spectrum Brands	43,175	10.5
TIKI	Lamplight Farms	40,800	9.9
Mosquito Magnet	Woodstream	12,500	3.0
Repel, Sportsman, Sportsman Max, Clothing & Gear	Central Garden & Pet	4,450	1.1
PIC	PIC Corporation	2,950	0.7
Eagles-7	Bacon Products	2,000	0.5
All other-a	-	16,965	4.1
Total		410,840	100.0
a- Includes Bonide, J.T. Eaton, and others.			

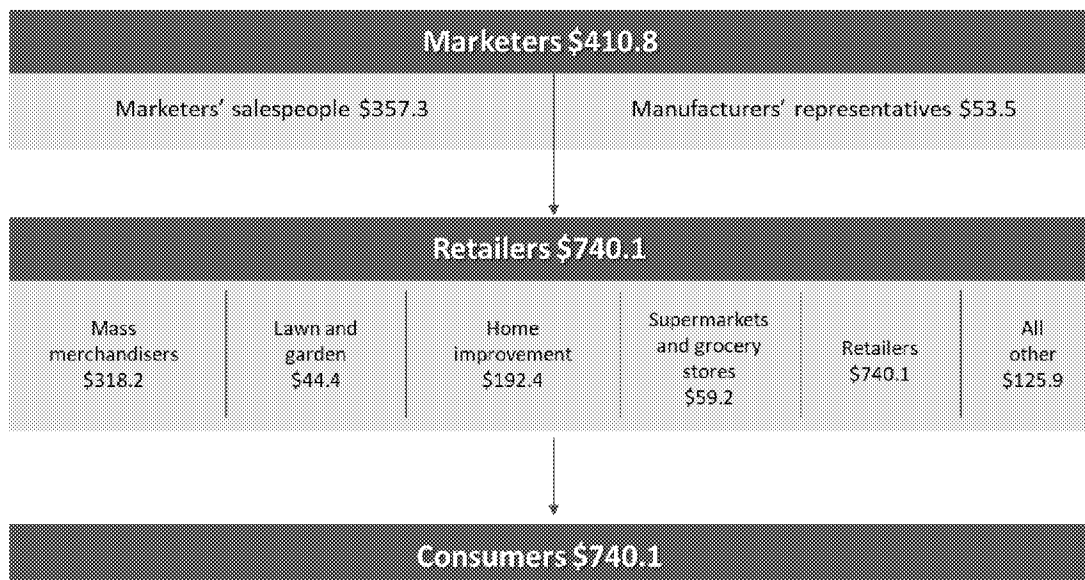
DISTRIBUTION CHANNELS

Marketers' sales representatives account for approximately 87.0% of sales, and manufacturers' representatives and brokers account for the remaining 13.0%. Approximately 73.0% of sales are made to retail accounts, 11.0% to distributors, and 16.0% directly to consumers or through mail order. This last measure is primarily a result of the Avon Skin So Soft sales direct to consumers.

Mass merchandise stores are the leading retail outlets for insect repellents, accounting for approximately 43.0% of sales in 2016. Home improvement centers are in second position with 26.0%.

Figure 5D-2: Estimated U.S. Distribution of Consumer Insect Repellents, 2016

Millions of marketers' dollars



PROMOTION

SC Johnson is the major advertiser among suppliers of insect repellents, spending \$13.7 million in 2016 for its various OFF! products. SC Johnson primarily uses different types of television for its promotional efforts, with virtually all of its promotion expenditures in this media category. Spectrum Brands spent an insignificant amount of advertising money for Cutter brands in 2016. Smaller marketers, less able to afford broad campaigns, usually concentrate their efforts on in-store displays and targeted print advertisements. Marketers have also attempted to increase product consumption through educational materials, including free pamphlets and newspaper stories that discuss the use of repellents to prevent Lyme disease, Rocky Mountain spotted fever, West Nile virus, and other diseases carried by ticks and mosquitoes.

OUTLOOK

Sales of insect repellents are partially dependent on weather conditions, which affect mosquito breeding and consumer participation in outdoor activities. Increasingly, sales of insect repellents are linked to consumer awareness of mosquito-borne diseases due to widespread news coverage of the Zika virus, in particular, and other diseases to a lesser extent. Therefore, a steady growth is predicted, at least in the next few years, as these concerns will likely continue to impact sales in the near future.

Marketers' sales of insect repellents are expected to increase over the next few years at a projected annual increase of 3.0% until 2021.

Table 5D-7: Outlook for Insect Repellents to the U.S. Consumer Market, 2016-2021

Year	\$ Million	Average annual growth, %
2016	410.8	-
2021	476.2	3.0

6. FUNGICIDES

Sales of fungicides increase 3.0% per year from \$56.5 million in 2011 to \$65.5 million in 2016. Consumer demand for fungicides has increased in recent years as gardeners, hobbyists, and lawn enthusiasts have gained knowledge of and experience with fungal disease. Homeowners in general, however, often do not recognize fungus damage or they replace diseased vegetation rather than treat it.

The following business development activity has affected this segment in the reporting period:

- In 2016, SBM acquires Bayer Garden and Bayer Advanced businesses in both Europe and North America, and it has created a separate business unit named SBM Life Science to manage the consumer pesticide market. SBM Life Science has its headquarters in France and provides plant protection and home and garden care products.
- The Andersons announces plans to exit the retail business and close its stores by the end of 2017 due to huge pre-tax losses in excess of \$20.0 million in the past eight years. Although the company has closed three stores and invested in other stores in order to maintain the retail segment, sales have continued to decline and are expected to decline in the future because of changing consumer preferences.
- In 2015, PBI-Gordon and Ishihara Sangyo Kaisha, Japan, entered an agreement to distribute Kabuto turf fungicide in the United States.
- In 2015, Vestar Capital acquired Woodstream, and it is now a portfolio company of Vestar.

PRODUCT DESCRIPTION

Fungicides are used to treat plants affected by mildew, blight, rust, mold, black leaf, dollar spot, brown patch, and other diseases. Most products are designed for use on roses, tomatoes, grass, or other specific vegetation, but lawn and multipurpose fungicides are also available.

Lawn products are commonly sold as spreadable granules. Rose and other floral, fruit, and vegetable products are commonly sold in dust and liquid forms, and are occasionally sold in aerosol form. Products are also available in dry flowable form, which is similar to a wettable powder, as well as other forms.

Combination products primarily marketed as fungicides but that may contain insecticides are included in this chapter. Fertilizer-fungicide combination products are covered in the Fertilizers chapter. Products that are primarily marketed as insecticides, but also contain fungicides, are covered in section 5A Outdoor Insecticides.

THE MARKET

Marketers' sales

Marketers' sales of lawn, garden, and houseplant fungicides in the United States are estimated at \$65.5 million in 2016, up 3.0% per year from \$56.5 million in 2011.

Table 6-1: Sales of Fungicides to the U.S. Consumer Market, 2001 to 2016

Year-a	\$ Million	Average annual growth, %
2001	31.9	17.6
2003	37.5	8.4
2005	40.7	4.2
2007	47.2	7.7
2009	50.5	3.4
2011	56.5	5.8
2016	65.5	3.0
a- This study was not conducted in 2002, 2004, 2006, 2008, 2010, 2012, 2013, 2014, or 2015.		

Sales by region

The West accounts for the most sales in 2016 with \$19.0 million, followed closely by the South with \$17.3 million.

Table 6-2: Sales of Consumer Fungicides in the United States by Region, 2016

Region	\$ Million	% Of total
West	19.0	29.0
South	17.3	26.4
Northeast	16.5	25.2
Midwest	12.7	19.4
Total	65.5	100.0

Retail shipments

Shipments of fungicides to retail outlets are estimated at 7.9 million lb and 1.9 million gal of formulated product in 2016.

Product form

Liquids are the most popular form of consumer fungicide, accounting for approximately 85.0% of sales in 2016. Granular products rank second with 14.0%. The increase in the use of liquid products is the result of the growth of neem formulated products.

Table 6-3: Sales of Consumer Fungicides in the United States by Product Form, 2016

Product form	Million			% Of total		
	Lb	Gal	\$	Weight	Volume	Value
Liquid	-	1.7	55.2	-	100	84.3
Granular	7.2	-	9.4	93	-	14.4
All other-a	0.7	-	0.7	7	-	0.9
Total	7.9	1.9	65.5	100	100	100.0

a- Includes dusts and wettable powders.

Active ingredients

Consumption of active ingredients is estimated at 3.8 million lb in 2016. Neem oil and chlorothalonil remain the most widely used active ingredients, together accounting for about two-thirds of the total consumption.

Table 6-4: Estimated Volume of Active Ingredients used in Fungicides in the U.S. Consumer Market, 2016

Active ingredient	Thousand lb	% Of total
Neem oil	1,367	36.3
Chlorothalonil	1,125	29.8
Thiophanate-methyl	536	14.2
Copper	108	2.9
Bacillus subtilis	70	1.9
Myclobutanil	36	1.0
Propiconazole	28	0.7
All other-a	499	13.2
Total	3,769	100.0

a- Includes sulfur, Triticonazole, Bacillus amyloliquefaciens, and Dithane, among other ingredients.

PRICES AND MARGINS

Retail margins on fungicides average from 35.0% to 40.0%, depending on the type of outlet.

Table 6-5: Retail Prices of Selected Consumer Fungicides in the United States, 2016

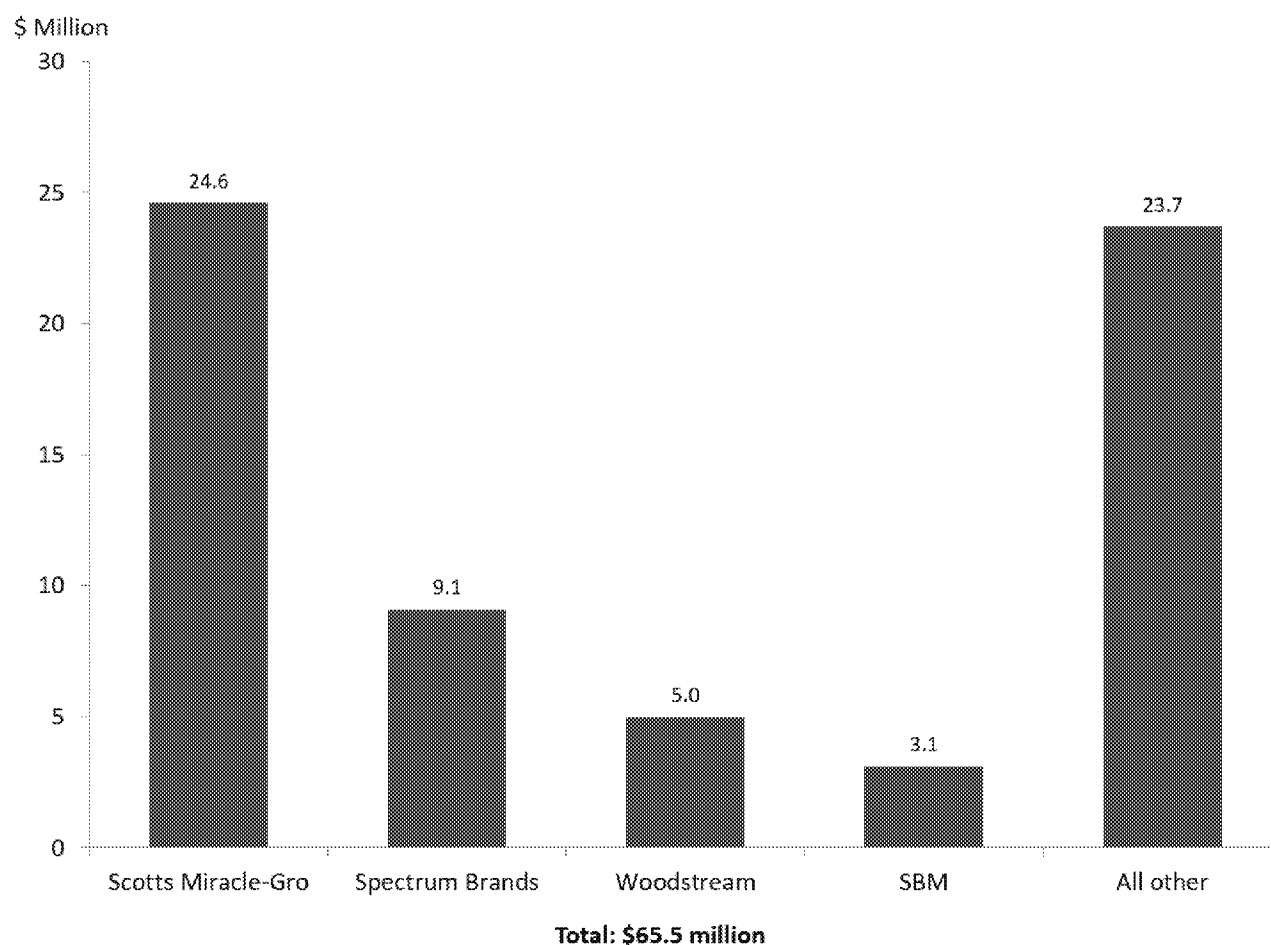
Brand	Marketer	Form	Size	Retail price, \$
Lawn Fungus Control Granules	Scotts	Granular	6.75 lb	16.97
Ortho MAX Garden Disease Control Concentrate	Scotts	Liquid	16 fl oz	15.99
Immunox Lawn Disease Control Ready To Spray	Spectrum Brands	Liquid	32 fl oz	16.77
Garden Safe Fungicide3 RTU	Spectrum Brands	Liquid	24 fl oz	7.49
Ortho RosePride, Rose & Shrub Disease Control Concentrate	Spectrum Brands	Liquid	16 fl oz	14.97
Safer Garden Fungicide RTU	Woodstream	Liquid	32 fl oz	7.39
Bayer Advanced Lawn Fungus Control Ready to Spray	Bayer	Liquid	32 fl oz	19.97
Bayer Advanced Rose & Flower Disease Control	Bayer	Liquid	32 fl oz	20.11
GardenTech Daconil Concentrate	GardenTech	Liquid	16 fl oz	12.99

PACKAGING

Lawn fungicides, which are usually granular products, are packaged in polyethylene bags or paper bags reinforced with polyethylene. Garden fungicides are generally sold in paperboard canisters, boxes, or plastic containers. Liquids are packaged in glass or plastic bottles. Dry flowable products are packaged in plastic jugs.

COMPETITION

The Ortho product line, owned by Scotts, remains the dominant brand of consumer fungicides, accounting for approximately 38.0% of total sales in 2016. Spectrum Brands ranks a distant second with approximately 14.0%.

Figure 6-1: U.S. Sales of Consumer Fungicides by Major Marketer, 2016**Table 6-6: U.S. Sales of Consumer Fungicides by Major Marketer, 2016**

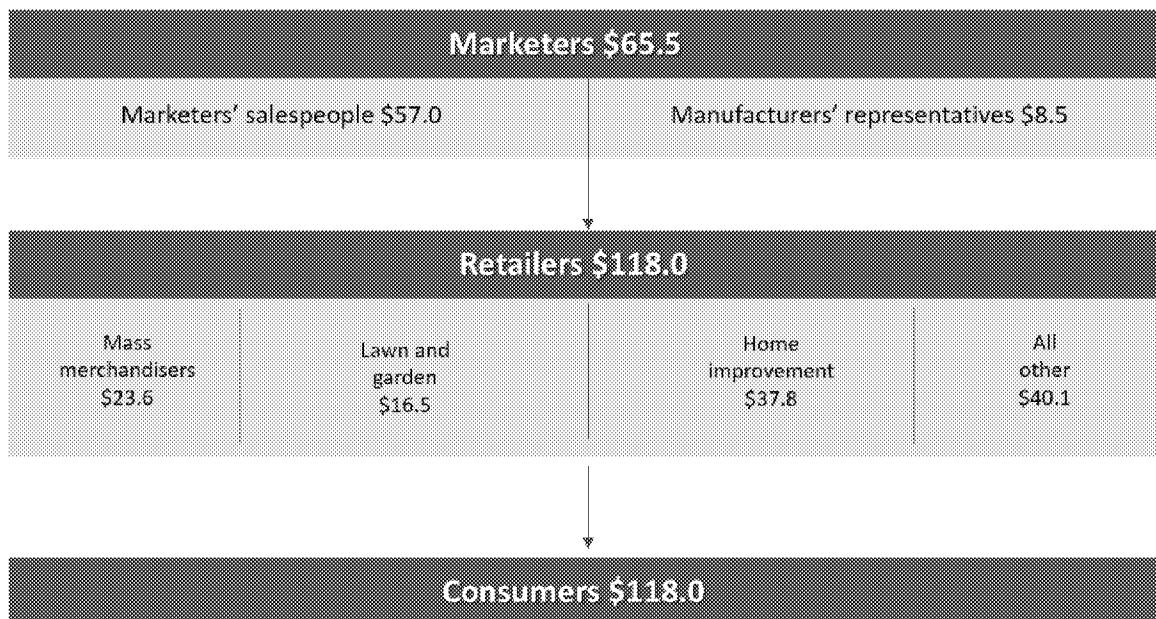
Brand(s)	Company	\$ Thousand	% Of total
Ortho, Scotts, EcoSense	Scotts	24,646	37.6
Spectracide, Garden Safe	Spectrum Brands	9,150	14.0
Safer, Concern	Woodstream	5,000	7.6
Bayer Advanced	SBM	3,125	4.8
Bonide	Bonide	3,000	4.6
All Natural, Liqui-Cop	Monterey Lawn & Garden	2,400	3.7
Southern Ag	Southern Agricultural Insecticides	2,200	3.4
Lilly Miller, Cooke	Central Garden & Pet	600	0.9
All other	-	15,400	23.5
Total		65,521	100.0

DISTRIBUTION CHANNELS

Marketers' own sales representatives are responsible for about 87.0% of fungicide sales in 2016. Manufacturers' representatives account for the remaining 13.0%. Home improvement centers and mass merchandise stores are the leading retail outlets for fungicides.

Figure 6-2: Estimated U.S. Distribution of Consumer Fungicides, 2016

Millions of marketers' dollars



PROMOTION

Fungicides are rarely advertised or promoted, unless they are in combination with other products within a supplier's line.

OUTLOOK

Sales of consumer fungicides are expected to increase slightly, with changes primarily the result of price increases, weather conditions, and gradually increasing knowledge on the part of the consumer. Sales are projected to reach \$70.9 million in 2021, an annual increase of 1.6%.

Table 6-7: Outlook for Fungicides in the U.S. Consumer Market, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	65.5	-
2021	70.9	1.6

7. RODENTICIDES

Sales of rodenticides increase to \$196.9 million in 2016, an annual increase of 2.4% from sales of \$174.7 million in 2011. Kline believes that continued growth in this segment is caused primarily by consumers attempting to treat for mice and rats themselves rather than using a pest control company.

The following business activity occurred in this segment during the reporting period:

- In 2013, Scotts Miracle-Gro announced that it reached an agreement with Bell Laboratories, the world's leader in rodent control technology, to acquire the Tomcat consumer rodent control line of products. The acquisition includes the Tomcat brand, as well as a long-term partnership with Bell Laboratories to bring innovative technologies to the consumer rodent control market.
- Twelve d-CON products that do not meet the EPA's current safety standards have been canceled. Eight of the products contain second-generation anticoagulants that pose unacceptable risks to non-target wildlife, and all twelve of them are sold without a protective bait station. Based on the agreement, Reckitt began phase out production of the twelve d-CON rat and mouse poison products in June 2014, and production stopped on December 31, 2014. Distribution to retailers ended March 31, 2015.
- In June 2015, Vestar Capital acquired Woodstream, and it is now a portfolio company of Vestar.

New product introductions in this segment include the following:

- In 2016, J.T. Eaton introduced two new second-generation rodenticide baits: Bait Block 2G, multiple-edge wax blocks, and Nectus 2G Soft Bait, made of oil-scented compounds.

PRODUCT DESCRIPTION

Consumer rodenticides have been greatly affected by legislation from the EPA since 2008. In 2008, the EPA notified suppliers of its intent to eliminate consumer use of highly toxic rodenticides and gave manufacturers until June 4, 2011, to develop new and safer products, such as the more expensive active ingredient vitamin D bait products. When June 4, 2011, came, many of the identified products were denied re-listing as they still contained the active ingredients considered highly toxic and not suitable for consumer application. These products were allowed to be sold until existing stocks as of June 4 were depleted. Reckitt Benckiser (manufacturer of the d-CON product line) contested the ruling in court, but has since undergone a voluntary cancellation process with twelve of its products, as noted above.

The EPA sought the elimination of most consumer rodenticides containing brodifacoum, bromadiolone, difethialone, difenacoum, and bromethalin.

Products containing brodifacoum are most commonly used to kill mice and rats in homes, yards, and outbuildings. Baits and fumigants for larger, burrowing outdoor rodents such as gophers are also included in this product category. Consumer rodenticide products must now adhere to the following requirements:

- They must be sold with bait stations that securely contain the poison.
 - More protective bait stations that offer resistance to tampering by children and pets, and/or to weathering are available and required for applications made around children, pets, or outdoors.
- Contain the block or paste poison bait (loose bait forms are no longer permitted).
- Rodenticide manufacturers may no longer sell consumer products:
- With more than one pound of poison.
- Containing four pesticides that pose the greatest risk to non-target wildlife (called second-generation anticoagulants – brodifacoum, bromadiolone, difenacoum, and difethialone).
 - Baits containing these poisons may still be used in homes by pest control professionals.

Currently, bromethalin, chlorophacinone, and diphacinone are registered by the EPA as acceptable active ingredients for rodent control in the consumer market.

THE MARKET

Marketers' sales

Marketers' sales of rodenticides are estimated at \$196.9 million in 2016, a 2.4% annualized increase from \$174.7 million in 2011.

Table 7-1: Sales of Rodenticides in the U.S. Consumer Market, 2001-2016

Year-a	\$ Million	Average annual growth, %
2001	88.9	0.6
2003	99.7	6.0
2005	109.0	4.6
2007	116.3	3.3
2009	153.3	14.8
2011	174.7	6.8
2016	196.9	2.4
a- This study was not conducted in 2002, 2004, 2006, 2008, 2010, 2012, 2013, 2014, or 2015.		

Sales by region

The South leads in sales of rodenticides in 2016, accounting for just over 40.0% of sales, followed by the North Central region with 22.0%. The West ranks third with 20.0%.

Table 7-2: Sales of Rodenticides to the U.S. Consumer Market by Region, 2016

Region	\$ Million	% Of total
South	80.1	40.7
North Central	43.3	22.0
West	39.4	20.0
Northeast	34.1	17.3
Total	196.9	100.0

Retail shipments

Shipments of consumer rodenticides are estimated at 23.9 million lb in 2016.

Product form

Most consumer rodenticides are formulated as dry baits. Of these, bait packets and pouches are the most popular.

Table 7-3: Sales of Rodenticides to the U.S. Consumer Market by Product Form, 2016

Product form	Million		% Of total	
	Lb	\$	Weight	Value
Bait packets/pouches	19.6	169.1	82.0	86.0
Powders	3.2	19.5	13.0	10.0
All other-a	1.1	8.3	5.0	4.0
Total	23.9	196.9	100.0	100.0

a- Chiefly, gas cartridges for gophers, other tunneling rodents, and liquids.

Active ingredients

Consumer rodenticides have changed over recent years and now primarily contain two active ingredients, diphacinone and bromethalin. The EPA regulations affecting highly toxic active ingredients have reduced their availability. Zinc phosphide, primarily used to kill moles and gophers, is the leading active ingredient in terms of pounds of active ingredient since it is used at a much higher rate than the rat and mouse actives.

Table 7-4: Volume of Active Ingredients Used for Rodenticides in the U.S. Consumer Market, 2016

Active ingredient	Lb	% Of total
Zinc phosphide	43,200	63.7
Potassium nitrate	9,934	14.7
Sulphur	9,934	14.7
Diphacinone	741	1.1
Bromethalin	587	0.9
All other-a	3,408	5.0
Total	67,804	100.0

a- Includes strychnine, cholecalciferol, and other ingredients.

Private-label activity

Private-label products are not a significant factor in this segment of the consumer market due primarily to the relatively low cost of branded products and the overwhelming percentage of the market held by Reckitt Benckiser's d-CON brand.

PRICES AND MARGINS

Retail margins for rodenticides average from 30.0% to 40.0% or more from manufacturer to consumer, but can vary significantly because of the variety of retail outlets that stock rodenticide products.

Table 7-5: Retail Prices of Selected Consumer Rodenticides in the United States, 2016

Brand	Marketer	Form	Size	Retail price, \$
Tomcat Mole & Gopher Bait	Scotts	Bait	6 oz.	5.22
d-CON Mouse Bait Station	Reckitt Benckiser	Block	12 blocks	8.47
d-CON Ready-Mixed Baitbits	Reckitt Benckiser	Bait	12 oz	10.85
Just One Bite II Bait Bar (2 pack)	Farnam	Bait	1 lb	14.23
Sweeney's Mole & Gopher Poison Peanuts	Woodstream	Bait	6 oz	5.99
Tomcat Mouse Killers	Scotts	Block	32 x 0.5 oz	8.97
J.T. Eaton Bait Block Peanut Butter	J.T. Eaton	Block	144 block	25.16

PACKAGING

Rodenticides are packaged almost exclusively in cardboard boxes ranging in size from 1 oz to several pounds. Products are applied using bait trays or self-contained bait stations, or are placed directly on other surfaces. Metal canisters are used for fumigants for outdoor application.

COMPETITION

Reckitt Benckiser continues as the dominant supplier of consumer rodenticides, controlling 61.0% of the market with its line of d-CON products, including Rat and Mouse Killer and Mouse-Prufe II. Scotts, through its acquisition of the Tomcat line, ranks second with 16.5%.

Table 7-6: U.S. Sales of Consumer Rodenticides by Major Marketer, 2016

Brand(s)	Company	\$ Thousand	% Of total
d-CON, Mouse-Prufe	Reckitt Benckiser	120,000	61.0
Tomcat	The Scotts Miracle-Gro Company	32,579	16.5
Victor, Sweeney's	Woodstream	20,000	10.2
Just One Bite II	Central Garden & Pet	7,750	3.9
Jaguar, Hawk	Motomco	4,000	2.0
Bait Block, Stick-Em	J.T. Eaton	3,325	1.7
Bonide	Bonide Products	2,500	1.3
Eagles-7	Bacon Products	700	0.4
All other	-	6,000	3.0
Total		196,854	100.0

DISTRIBUTION CHANNELS

Reckitt Benckiser sells both through its own sales force and through manufacturers' representatives directly to retailers and distributors. Smaller suppliers typically make use of manufacturers' representatives, who in turn sell to distributors. Overall, an estimated 87.0% of sales are made directly to retailers, with the balance to distributors.

Mass merchandise stores and home improvement centers are the leading retail outlets for rodenticides. Farm supply centers are also important.

Figure 7-1: U.S. Sales of Consumer Rodenticides by Major Marketer, 2016

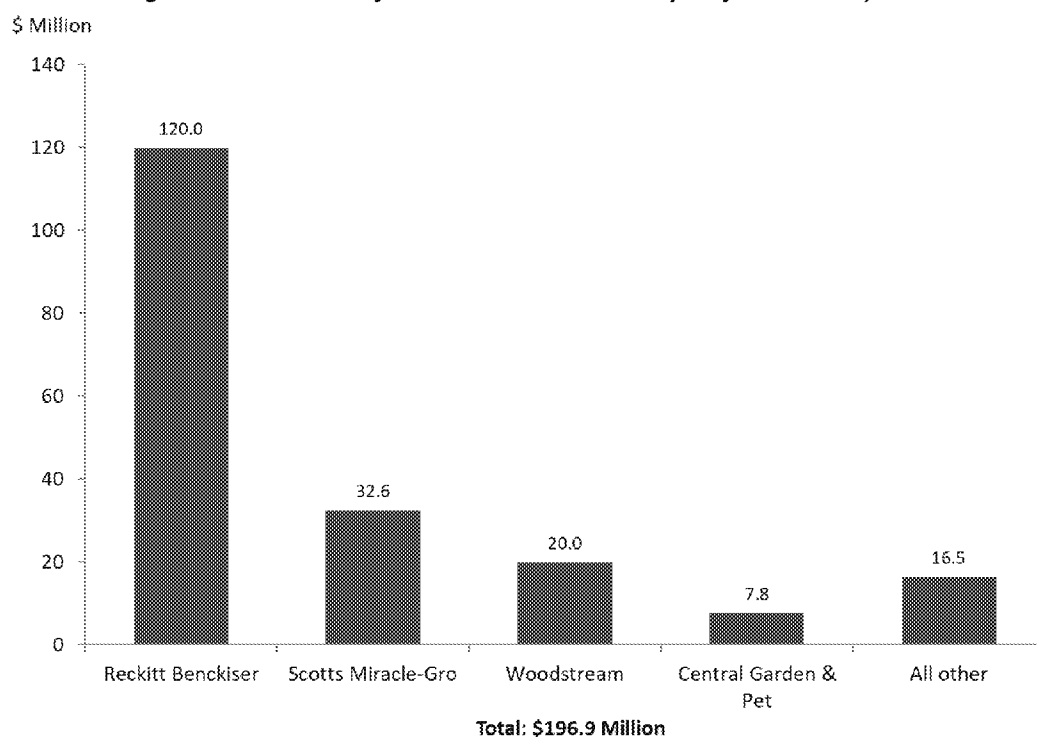
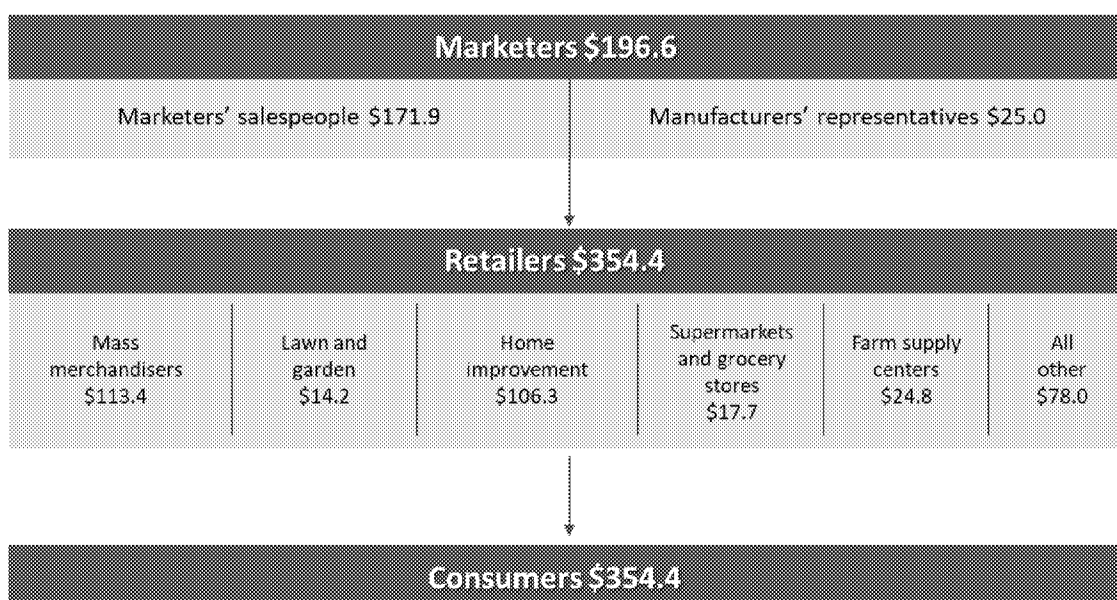


Figure 7-2: Estimated U.S. Distribution of Consumer Rodenticides, 2016

Millions of marketers' dollars



The channel data reflect the number of respondents that purchase the product category in each type of outlet. This historical method does not take into account the impact of income differences on channel revenue. To account for that impact, this analysis used the respondents with incomes of more than \$50,000 per year to reflect the higher disposable incomes spent on lawn, garden, and home products, as well as larger lot sizes associated with these higher-income individuals. Both factors would tend to increase their spending per purchase. Kline & Company has not altered the tabulations shown in this section, but has used only the higher-income respondents to calculate distribution channel importance.

PROMOTION

National advertising, coupons, and other forms of product promotion for rodenticides are minimal compared with promotional activity for most other consumer pesticides. Consumers tend to be unresponsive, and Reckitt Benckiser's dominance of this category makes promotional expenditures unrewarding. Most activity is seen in price reductions of brands that have been discontinued. Most of its advertising budget for rodenticides is to network, cable, and spot television advertisements.

In addition, marketers get little in-store support from retailers. The margins on rodenticides are often unattractive to retailers in comparison with other items, the products are unappealing in nature, and purchases are made intermittently and in small quantities. Therefore, rodenticides get poor shelf-space assignments and minimal attention.

OUTLOOK

The rodenticides market will be in a state of change as the active ingredients allowed for consumer use have been changed. Market fluctuation could occur.

For the next several years, sales of consumer rodenticides are projected to remain stable as a certain percentage of homeowners continue to do their own control of mice. New active ingredient prices, however, may be higher. Slight growth resulting in a \$201.9 million market is forecast for 2021, an annual increase of 0.5%.

Table 7-7: Outlook for Rodenticides in the U.S. Consumer Market, 2016-2021

Year	\$ Million	Average annual growth, %
2016	196.9	-
2021	201.9	0.5

8. DISTRIBUTORS

ARETT SALES CORPORATION

OVERVIEW

Arett Sales Corporation was founded in 1951 by Irving and Paula Librett as an exclusive distributor to the retail garden center. During 1993, Arett Sales expanded its business activities by acquiring the lawn and garden portion of Messinger Company of Rochester, NY, and by purchasing the assets of Pascack Sales of Monroe, NY. In 1997, the company moved its warehouse in Waterbury, CT, to Cheshire, CT. In 1998, Arett Sales purchased the Libner Corp and The Works, which is a Dollar Store division. In 1999, Arett Sales added a new division called Good Prod, which sells exclusively to the professional lawn care and landscape market. By the end of 1999, Arett Sales had three additional divisions: Arett OutSource, Greensmith, and Import.

In 2000, Arett Sales expanded its distribution capacity by 35.0% by moving the Cheshire facility to a new location in Bristol, CT, with a capacity of 250,000 sq ft. In 2004, Arett Sales added 60,000 sq ft to its warehouse space and added another 114,000 sq ft in 2007. Also in 2007, Arett Sales purchased the Lose Brothers of Louisville, KY, (serving Ohio, Kentucky, Indiana, and Tennessee) and upgraded its warehouse management system.

In April 2015, Arett Sales and AmericanHort entered a partnership to further enhance the services provided to independent garden centers and hardware stores. The partnership is a collaborative effort of both companies to support garden retailers.

In February 2017, Arett Sales expanded its warehouse facility based in Troy, OH, and added additional 70,000 sq ft of space. The company's continued growth in the Midwest is the key reason behind this expansion.

Arett Sales is a leading wholesaler of lawn and garden products, still entirely owned and controlled by the Librett family.

TOTAL SALES

Sales for Arett Sales are estimated at around \$150.0 million in 2016. Sales of consumer pesticides, fertilizers, soils, and soil amendments account for approximately 40.0% of total sales, or approximately \$60.0 million, with the remaining 60.0% made up of an assortment of other lawn and garden merchandise, holiday merchandise, and miscellaneous supplies.

Arett Sales' revenues are expected to grow at an average rate of approximately 5.0% in the next five years. Growth will be driven by new products for indoor gardening and hydroponic gardening.

PRODUCTS

Arett Sales distributes a full line of consumer pesticides, fertilizers, and soil amendments. Fertilizers account for the largest volume, followed by pesticides and amendments. The company sells to professional landscapers, independent and chain retail garden centers, hardware stores, home centers, and Dollar stores.

Table 8-1: Selected Suppliers Distributed by Arett Sales, 2016

Product category	Supplier
Fertilizers	The Jobe's Company
	Espoma
	Lebanon Seaboard
	Scotts
	Voluntary Purchasing Group
	Woodstream
	Good Earth Horticulture
Pesticides	Bonide
	Central Garden & Pet
	Monterey Lawn & Garden
	Scotts
	S.C. Johnson
	Lebanon Seaboard
	SBM
	PIC Corporation
	Summit Chemical
	Spectrum Brands
	St. Gabriel Organics
	Voluntary Purchasing Group
Soil amendments	Woodstream
	Espoma
	Scotts
	Spectrum Brands
	Good Earth Horticulture
	Voluntary Purchasing Group

TERRITORY

The company distributes products in twenty locations: Connecticut, Delaware, District of Columbia, Indiana, Kentucky, Maine, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, Tennessee, Virginia, and West Virginia.

FACILITIES

Arett Sales is headquartered in Pennsauken, NJ. The company operates two warehouses in Bristol, CT, and Troy, OH, servicing 19 locations and Washington, D.C. Arett Sales again increased the square footage of its primary warehouse location in Bristol, CT, for a combined capacity of more than 500,000 sq ft. With the new warehouse built in 2008 in Troy, OH, Arett Sales now has a total of 600,000 sq ft of warehouse space.

The company has also expressed plans to set up a showroom at the new office location, displaying merchandise of Arett Sales' manufacturing partners.

ADVERTISING

The company participates in cooperative advertising with the manufacturers it represents. Arett Sales hosts trade shows and open houses for garden retailers, exhibiting manufacturers in a booth-type format.

The company also offers Custom Management Services, which help customers with web site, order fulfillment, invoice, marketing material, and other design services to improve their business practices.

MANAGEMENT AND PERSONNEL

Arett Sales employs about 175 people, with 44 specializing in sales serving 20 states.

Table 8-2: Key Management Personnel for Arett Sales

Individual	Position
Lindsey Vincent Chesbrough	President and CEO
Mauri Librett	Vice President, Marketing & Advertising
Cathy Schappert	Chief Financial Officer
Mike Mallon	Vice President, Merchandising
Mike Walker	Vice President, Sales
Neil Shainwald	Vice President, Sales
Sal Intrieri	Vice President, National Accounts

BRADLEY CALDWELL

OVERVIEW

Privately held Bradley Caldwell, Inc. was created from the 1996 merger of Caldwell Supply of Hazleton, PA, and New Holland Supply of New Holland, PA. Both Caldwell Supply and New Holland Supply had long been key regional distributors of consumer fertilizers and pesticides, including lawn and garden herbicides, rodenticides, and pet insecticides. Caldwell Supply was founded by Ralph Caldwell, Sr., in 1930, and New Holland Supply was founded in 1949. The combined company, Bradley Caldwell, distributes pet supplies, equine products, farm supplies, animal health products, pond, wild bird, and lawn and garden products. The company is owned and operated by the Bradley family.

In 2008, Bradley Caldwell acquired the operating assets of Loveland Pet Products, a Mason, OH-based, family-owned company founded in 1924 distributing pet foods and supplies to pet retailers in Ohio, Kentucky, Indiana, Michigan, Pennsylvania, West Virginia, Alabama, Kansas, Missouri, and Illinois. It also offers its products through e-stores.

TOTAL SALES

Bradley Caldwell's sales are estimated at \$258.1 million in 2016. Consumer pesticides (including pet insecticides and rodenticides), fertilizers, and soils and soil amendments account for approximately 28.0% of total sales, or approximately \$72.3 million.

PRODUCTS

Bradley Caldwell sells primarily to independent retailers such as lawn and garden centers, superstore retailers, as well as smaller farm and feed stores, pet shops, and tack shops.

Table B-3. Major Suppliers Distributed by Bradley Caldwell, 2016

Product category	Supplier
Fertilizers	Alaska Fish
	Bonide
	Espoma
	The Jobe's Company
	GreenView
	Kellogg Garden
	GreenView
	Monterey
	Jonathan Green
	Scotts
	Spectrum Brands (Schultz)
	St. Gabriel Labs
	Woodstream
Pesticides	Bonide
	Control Solutions
	Espoma
	Monterey
	Organic Control
	Roxide
	Scotts
	St. Gabriel Organics
	Spectrum Brands (Schultz)
	Summit Chemical
	Tanglefoot
Pet insecticides	Woodstream
	Durvet
	F.C.E.
	Farnam
	Hartz
	Natural Chemistry
	Durvet
	United Pet Group
	Virbac
	Zodiac
Rodenticides	Bonide
	Durvet
	Farnam
	Scotts
	Roxide
Soils and soil amendments	Espoma
	Scotts
	Spectrum Brands (Schultz)

TERRITORY

The company distributes products to 23 states throughout the entire northeastern half of the United States, from Maine to North Carolina and west to Michigan.

FACILITIES

Bradley Caldwell has its headquarters and maintains distribution facilities in Hazleton, PA. The company claims to store around 27,000 products in eight various categories at its Hazleton warehouse.

The company has also launched BCI Bullseye 5, its dealer information software which provides the necessary information to dealers about different products, inventory availability for each product, sales history, various product ordering options such as direct shipping, and other searchable information.

ADVERTISING

Bradley Caldwell hosts trade shows for dealers, as well as publishing several magazines/hot sheets and various promotions. The company also hosts two trade shows each year, one in February in Hershey, PA, and another in Atlantic City, NJ, in September.

MANAGEMENT AND PERSONNEL

Bradley Caldwell employs approximately 435 people, including 70 sales representatives. The company's sales staff consists of ten territory managers, a telesales manager with about eight telesales executives for indenting orders and dispatch, in addition to the customer support staff and the field sales representatives.

Table 8-4: Key Management Personnel for Bradley Caldwell

Individual	Position
James L. Bradley	CEO, President
James Eshleman	Vice President, Finance
Joseph Doto	Sales Manager
Doreen Straka	Advertising, Events and Sales Manager
James Woodall	Buyer, Pet Products

BWI COMPANIES

OVERVIEW

BWI Companies, Inc. was established in 1985 by the Bunch family and grew by adding distribution centers. In 1990, four wholesalers—Bunch Wholesale, Inc.; BWI Jackson, Inc.; BWI Schulenburg, Inc.; and BWI Dallas/Fort Worth, Inc.—were consolidated into Bunch Wholesale, headquartered in Nash, TX. In 1992, the name was changed to BWI Companies, Inc. The company is the leading distributor in the South, ranging from Florida to Texas, and serves a wide variety of retailers. The Bunch family continues to own 100% of the company stock. The company distributes lawn and garden products, horticultural products, and turf products to garden centers, farm stores, hardware stores, grocery, regional multi-store outlets, landscapers, lawn care companies, golf courses, and other related outlets.

In January 2006, CEO Bob J. Bunch received the Lifetime Achievement Award from the Lawn & Garden Marketing and Distribution Association (LGMDA) in recognition of his outstanding contributions, service, and dedication to the lawn and garden industry. Also in 2006, BWI Companies received awards for Trade Show, Accounts Payable, and Overall Relationship for the LGMDA. In 2007, the company received awards for Trade Show and Accounts Payable.

In March 2014, BWI Companies selected Vormittag Associates's (VAI) S2K Enterprise software to improve its distribution processes and increase productivity. BWI decided to collaborate with VAI to automate and integrate its core business functions, eliminate manual processes, and to extract data into customer buying trends.

TOTAL SALES

Total sales for BWI Companies are estimated at \$325.0 million in 2016. Sales to consumer markets account for approximately 46.0% of sales, or \$149.5 million. The remaining sales are to professional and agricultural markets. Of the products sold to consumer markets, about 60.0%, or \$89.7 million, are estimated to be pesticides, fertilizers, and soils and soil amendments.

PRODUCTS

BWI Companies wholesales a full line of consumer pesticides, fertilizers, soil amendments, livestock and pet products, and other lawn and garden supplies for retail establishments, professional growers, and professional turf managers.

Table 8-5: Selected Suppliers Distributed by BWI Companies, 2016

Product category	Supplier
Fertilizers	ferti-lome
	Scotts
	Spectrum Brands
Pesticides	Bonide
	Control Solutions
	ferti-lome
	GardenTech
	Monsanto
	Scotts
	Neogen
	Merial
	Spectrum
	Merck Animal Health
	Central Life Sciences
	Happy Jack
	Woodstream
Soil amendments	Voluntary Purchasing Group
	ferti-lome
	Medina
	Arborjet
	Scotts

TERRITORY

BWI Companies has 14 locations and distributes products across the Mid-South and Southeastern regions of the United States. Most of the sales happen in the states of Alabama, Arkansas, Florida, Georgia, Illinois, Kentucky, Kansas, Louisiana, Missouri, Mississippi, Oklahoma, Tennessee, North Carolina, South Carolina, and Texas. Some border states, however, may not be fully covered.

FACILITIES

The company is headquartered in Nash, TX. It has a total of 15 locations throughout the southern United States, which were gradually added from 1981 to 2001. The company has eight distribution centers and seven ancillary facilities. Sales offices are located in Jackson, MS; Memphis, TN; Carrollton, Houston, Nash, and Schulenburg, TX; Springfield, MO; Greer, SC; and Apopka and Homestead, FL. BWI Companies has a field sales staff of nearly 125 people that deliver products on company-owned fleet.

ADVERTISING

BWI Companies participates in a number of trade shows and is a member of the Gro Group of Bedford, MA, an organization of 12 wholesale distributors focusing on the home and garden market.

The company also organized a 2012 San Antonio BWI EXPO that was held September 17-19, 2012, at Henry B González convention center in San Antonio, TX. The company organizes BWI EXPO every year. In 2016, it was organized at Music City Center in Nashville.

MANAGEMENT AND PERSONNEL

BWI Companies employs approximately 600 people, including a field sales staff of about 125.

Table 8-6: Key Management Personnel for BWI Companies

Individual	Position
Bob J. Bunch	Chairman and Chief Technology Officer
James S. Bunch	CEO, President
Robert H. Bunch	CEO, President
Mike Mize	Executive Vice President
Betty Bunch	Secretary, Treasurer
Mark Fomby-a	Vice President, Sales
Steve Collier	Director, HR
a- Member of the Board of Directors of LGMDA.	

EXCEL GARDEN PRODUCTS

OVERVIEW

Headquartered in Santa Fe Springs, CA, Excel Garden Products is a division affiliate of Central Garden & Pet Co., Lafayette, CA, a publicly held manufacturer of seeds, lawn and garden chemicals, and other products, as well as pet supplies and related products. Central Garden & Pet is divided into two business segments: Pet, and Lawn and Garden. Excel Garden Products is the distribution division of Central Garden that distributes lawn and garden products. Central Garden & Pet is discussed in greater detail in the Suppliers chapter.

TOTAL SALES

Central Garden & Pet does not publish sales information for Excel Garden Products since Excel Garden Products only offers the distributional services for Central Garden. Total sales for Excel Garden Products are estimated at \$200.0 million in 2016, all of which comes from lawn and garden products distribution.

PRODUCTS

Excel Garden Products reportedly distributes products made by all major and most middle and small suppliers. The Lawn and Garden segment includes: grass seed, wild bird feed, lawn and garden care products (including chemicals), decorative outdoor patio products (including pottery) and Christmas products, lighting, and insect and pest control products.

Table 8-7: Central Garden and Pet's Brands Distributed by Excel Garden Products, 2016

Category	Product
Herbicides (including weed and moss control)	Knockout, Strike, Lilly Miller, Image, Sevin, Over'nOut, RooTone, Eliminator (Walmart private label)
Insecticides/pesticides	AMDRO and various ant baits, animal repellents, and garden aid products under the Grant's brand name
Fertilizers and soil supplements	Alaska Fish Fertilizer and various granular and liquids under the Pennington, Ironite, and other private labels
Seeds	Pennington and Rebels

TERRITORY

The company sells directly to national and regional retail chains, independent distributors, grocery stores, nurseries, and garden supply retailers throughout the country. Walmart accounts for 29.0% of the Lawn and Garden product sales. Home Depot is responsible for 16.0% of Lawn and Garden product sales, and Lowe's 25.0%. Excel's largest competitors are the Scotts Company and Spectrum Brands.

FACILITIES

The Garden division of Central Garden and Pet operates 14 manufacturing facilities in addition to contracted manufacturing facilities. The company also leases about 12 of its manufacturing sites and 15 of its sales and marketing locations. The Excel Garden Products division operates distribution centers in Dallas, TX; Orlando, FL; Portland, OR; Ontario, CA, and others. Santa Fe Springs, CA, (headquarters) is the largest with about 105 salespeople servicing more than 8,000 accounts in southern California and the surrounding mountain states (Arizona, Nevada, Colorado, and Utah). Sacramento, CA, has approximately 31 sales representatives handling around 1,000 accounts in northern California and Nevada. Portland, OR, has approximately 35 salespeople covering Washington, Oregon, and the northern mountain states. Grand Prairie, TX, has about 30 salespeople distributing in the Midwest.

The warehouse of Excel Garden Products at the Santa Fe Springs, CA, location has an inventory of over 15,000 different lawn and garden products.

MANAGEMENT AND PERSONNEL

Excel Garden Products employs approximately 440 people with a substantial increase in part-time and temporary employees during the busy months of February through June.

Table 8-8: Key Management Personnel for Excel Garden Products

Individual	Position
William E. Brown	Chairman of the Board and CEO of Central Garden and Pet
Michael Reed	Executive Vice President – Central Garden and Pet
Marilyn Choi	CFO, Garden Group
Ronnie Stapp	Executive Vice President – Seed Division
Lori Varlas	Senior VP, CFO and Secretary
Paul Duval	Senior VP, Sales – Garden Group
Dean Morrison	President - Garden Distribution
Paul Hibbert	Senior VP Distribution and Supply Chain - Garden Group

L&L NURSERY

OVERVIEW

L&L Nursery started in 1953 by producing redwood containers for garden centers throughout Southern California. Over the years, the company developed into one of the leading West Coast distributors and manufacturers of lawn and garden products.

TOTAL SALES

Corporate sales are estimated at \$85.0 million in 2016. Of this, revenue derived from products marketed in the consumer market is estimated at two-thirds of company sales, or about \$56.7 million. In addition to redwood products, L&L Nursery also makes its own brands of potting soil under the Uni-Gro, Uni-Pro, and Sure-Gro labels for the regional market. Altogether, the company distributes more than 7,000 products.

PRODUCTS

L&L Nursery is adding suppliers and product mixes to broaden its product portfolio. The company distributes pesticide products for manufacturers such as Scotts, Spectrum, Bonide, AMDRO, Lilly Miller, GardenTech, Monterey, PBI-Gordon, Woodstream, Safer, Fertilome, and Summit Chemical. It distributes fertilizers for Scotts, The Jobe's Company, Spectrum, Bonide, Lilly Miller, Fox Farm, and Grow More; and soil amendments for Scotts, Spectrum, Espoma, Bonide, Fox Farm, and JRM Chemical. Retailers include nurseries, as well as mass merchandisers and home improvement centers.

Table 8-9: Selected Suppliers Distributed by L&L Nursery, 2016

Product category	Supplier
Fertilizers	Grow More
	Fox Farm
	Scotts
	Spectrum
	The Jobe's Company
	Bonide
	Lily Miller
Pesticides	Bonide
	AMDRO
	Monterey
	Lily Miller
	GardenTech
	Scotts
	PBI-Gordon
	Spectrum
	Summit Chemical
	Woodstream
	Safer
Soils and soil amendments	Fertilome
	JRM Chemical
	Scotts
	Bonide
	Espoma
	Spectrum Brands (Schultz)
	Fox Farm

TERRITORY

The company has distribution coverage in most of the Western states with a focus on California, Arizona, Nevada, New Mexico, Utah, Washington, Oregon, Alaska, Colorado, Idaho, Montana, and Wyoming.

FACILITIES

The largest facility of L&L Nursery, located in Chino, CA, houses production, corporate offices, sales office for the southwestern region, and the distribution warehouse serving Arizona, Nevada, New Mexico, and California. The company has a sales office in Fremont that serves Northern California and Northern Nevada. The company's facility in Washington houses the sales office and distribution warehouse that serves Alaska, Colorado, Oregon, Utah, Washington, and Wyoming. The combined warehouse capacity of L&L Nursery is more than 240,000 sq ft. In addition, the company has two production facilities located in Chino, CA, and Kent, WA. Overall, L&L Nursery has more than 225 employees.

ADVERTISING

The company participates in a cooperative advertising program with some of the manufacturers it represents. L&L Nursery hosts a dealer trade show in Reno, NV, each October. It also participates in trade shows and is a member of a number of trade associations, including the American Association of Nurseries, California Association of Nurseries and Garden Centers, and the Oregon Association of Nurseries. The company also advertises through YouTube. L&L Nursery is also a member of the Gro Group of Bedford, MA, an organization of fourteen wholesale distributors focusing on the home and garden markets.

MANAGEMENT AND PERSONNEL

L&L Nursery employs approximately 225 people, including 27 sales representatives.

Table 8-10: Key Management Personnel for L&L Nursery

Individual	Position
Tom Medhurst	Chief Executive Officer and President
Mark Hernandez	Director
Harvey Luth	Vice President
Jackie Giuntoli	Director, Key Accounts
Sandie Eckhardt	Vice President, Finance
Bart Fornfeist	Vice President, Sales and Marketing

V-G SUPPLY CO.

OVERVIEW

V-G Supply Company, originally Vegetable Grower Supply Company, was founded in 1915 in Morton Grove, IL. Headquartered in Park Ridge, IL, this company is one of the largest wholesale distributors for lawn, garden, and nursery supplies in the Midwest. It is a closely held company controlled by the Kotas family.

TOTAL SALES

Total sales of consumer insecticides and lawn fertilizers for V-G Supply in 2016 are estimated at more than \$120.3 million, almost entirely for the consumer market, with a limited volume to nurseries.

PRODUCTS

V-G Supply warehouses and distributes a full line of lawn and garden products under the categories of insect & pest control, weed control, lawn fertilizers, grass seeds, soils, plant care, animal/repellents control. The company also distributes a wide range of garden apparel and garden décor products, gardening tools and applicators, landscaping and growing supplies, bird and nature supplies, watering devices, and tree and plant protection products, as well as books on gardening and landscaping. The lawn and garden products distributed by V-G Supply are sold to independent garden centers, mass merchandisers, hardware stores, home centers, and other horticultural businesses.

The bulk of the company's business is wholesaling products from most major firms. The company acts as an agent for these firms and, in addition to serving suppliers, also handles orders for non-stock products that are featured during its annual lawn and garden show.

Table 8-11: Selected Suppliers Distributed by V-G Supply in 2016

Product category	Supplier (brand)
Lawn fertilizers	Scotts (Ortho and Lawn)
	Lebanon Seaboard Corporation
	Espoma
	Woodstream (Lawn Restore)
	Milorganite Division-MMSD
Pesticides	Bonide
	Scotts (Ortho and Roundup)
	Tanglefoot Company
	Woodstream (Safer)
	Monterey
	Miracle-Gro
	United Industries Corp.
	Espoma
	EcoSMART
	Tech Pac, LLC
	Atlas Chemical Corp.
	S.C. Johnson
	Roxide International
	J.T. Eaton & Co. Inc.
	PIC Corp.
	SpringStar, LLC
	Spectrum
	Summit Chemical
Animal control and animal repellents	Excel
	Bonide
	Roxide International
	J.T. Eaton & Co. Inc.
	PIC Corp.
	Liquid Fence
	Shake-Away
	Tanglefoot Company
Weedicides	Preferred Products Inc.
	Reckitt Benckiser
	Scotts (Ortho, Roundup, and Miracle-Gro)
	Lebanon Seaboard Corporation
Soils and soil amendments	Bonide
	United Industries Corp.
	Good Earth Organic Corp. (Hoffman)
	Scotts (Soils)

TERRITORY

V-G Supply has expanded its territory from its traditional Midwest area (Northern Illinois, Michigan, Indiana, Wisconsin, and Ohio) to include Kentucky, Minnesota, North Dakota, South Dakota, and Western Pennsylvania.

FACILITIES

The company has combined warehouse facilities with more than 450,000 sq ft in two locations: Calumet City, IL, and Munster, IN. The company claims to have a modern, fully functional centralized warehousing system to process and deliver most orders within 72 hours. The company distributes lawn and garden products to retailers and not directly to customers. The company has developed and fine-tuned a completely scan-based warehouse management system aimed at maximizing efficiency and accuracy.

ADVERTISING

V-G Supply is a member of the LGMDA and participates in its trade shows. It also hosts an annual lawn and garden show. The company is a member of the Gro Group of Bedford, MA, a network of 12 wholesale distributors focusing on the home and garden market.

MANAGEMENT AND PERSONNEL

The company employs approximately 80 people. In addition, between January and June, and particularly during its annual lawn and garden show, employment of part-time and/or temporary workers may add a total of 110 or more people.

Table 8-12: Key Management Personnel for V-G Supply

Individual	Position
Ken Kotas	President
Tom Doll	Vice President Operations
Trevor Greene	Marketing/Purchasing

WETSEL SEED, INC.

OVERVIEW

Wetsel Seed, Inc., headquartered in Harrisonburg, VA, was founded in 1911 by the Wetsel family, which maintained control of the business until 1989. In 1990, the company was purchased by Southern States Cooperative, Inc. of Richmond, VA, and again became independent in 2002. The company sells a diverse mix of products, including lawn and garden supplies to retail garden centers, hardware stores, and home centers; grower materials to greenhouses and nurseries; farm supplies to large contractors and seed producers; and turf supplies to sod growers, golf courses, and sports fields. The company distributes products for approximately 275 manufacturers.

In 2011, Wetsel Seed was acquired by BFG Supply, a distribution company based in Burton, OH, supplying flower, herb, and vegetable seed packets, racks and bulk seed for the lawn and garden industry with 14 service centers covering 17 states in the United States. BFG Supply bought Wetsel Seed, Inc. for \$1.8 million.

TOTAL SALES

Wetsel Seed's sales are estimated at \$44.0 million in 2016. The company divides its customer base into four groups: Lawn and Garden (retail), Grower Industry, Farm Dealers, and Turf. Sales for the Lawn and Garden group account for about 52.0%, or approximately \$22.9 million. The remaining 48.0% is split among the other non-consumer categories.

Sales of pesticides, fertilizers, and soil amendments are estimated at \$21.1 million, or 48.0% of total sales.

PRODUCTS

Wetsel Seed sells a full line of consumer pesticides, fertilizers, and soil amendments, including its own brands of fertilizers marketed under the Wetsel and Wesco labels. These two private-label brands account for less than 6.0% of lawn and garden sales. Wetsel sells the lawn and garden products to garden centers, hardware stores, and home centers. The company handles 17,000 products, 10,000 of which are consumer-oriented products. Wetsel also manages four major catalogs: Wholesale, Grower, Turf, and Plant Material.

Table 8-13: Selected Major Suppliers Distributed by Wetsel, 2016

Product category	Supplier
Fertilizers	Espoma
	Schultz
	Bonide
	Monterey
	Lebanon
	The Jobe's Company
	Scotts
	Rich Earth
Pesticides	Bayer
	Bonide
	Espoma
	Summit Chemical
	Bayer
	Woodstream
	Monterey
	St. Gabriel Organics
	Scotts
Soil amendments	Espoma
	Bonide
	Miracle-Gro
	BACCTO
	Jiffy
	Scotts
	Schultz

TERRITORY

Wetsel distributes products for nearly 275 manufacturers. The company distributes products in Virginia, West Virginia, Washington, D.C., Maryland, New Jersey, Pennsylvania, Kentucky, Ohio, Delaware, North Carolina, South Carolina, New York, Indiana, Michigan, and Tennessee. The company's customers include retail garden centers, hardware stores, home centers, farm supply stores, and greenhouses & nurseries, among others.

FACILITIES

Wetsel Seed manages its distribution from two major locations in Harrisonburg, VA, and Kittanning, PA. The company has a combined 220,000 square feet of warehouse space. Wetsel claims to store and stock about 17,000 products in its warehousing locations.

ADVERTISING

Wetsel Seed takes part in trade shows, such as those conducted by the Lawn & Garden Marketing and Distribution Association (LGMDA) of Philadelphia, PA. It is also a member of the Gro Group of Bedford, MA, an organization of 12 wholesale distributors focusing on the home and garden markets, the North American Horticultural Suppliers Association, and the American Seed Trade Association. The company employs 25 sales representatives.

MANAGEMENT AND PERSONNEL

Wetsel Seed employs approximately 140 people, including officers.

Table 8-14: Key Management Personnel for Wetsel Seed

Individual	Position
Floyd Grigsby	President & CEO
Tom Wetsel	Vice President
Wayne Texiere	Purchasing Manager
Jim Lee	Director of Operations

WYATT-QUARLES SEED CO.

OVERVIEW

Wyatt-Quarles Seed Company was founded in 1881 as a mail order seed retailer and a division of Job P. Wyatt & Sons of Raleigh, NC. The company is headquartered in Garner, NC. The current chairperson, V. Charles Wyatt, is a descendent of the founder.

TOTAL SALES

Sales of Wyatt-Quarles Seed Co. have declined slightly in the last two years and are estimated at \$25.3 million in 2016. Approximately \$16.4 million or 65.0% of the company's sales takes place in the consumer market, while the remaining 35.0% is in the professional market. In the fertilizers category, consumer market sales account for 65.0%, and 35.0% is accounted by the professional market sales. In total, the company has 1,400 retail customers and sells nearly 15,000 products.

PRODUCTS AND MARKETS

Wyatt-Quarles Seed Co. wholesales a full line of fertilizers, soil amendments, grass and garden seed, and other garden supplies to independent lawn and garden centers, farm centers, and nurseries. The company also sells pesticides, rodenticides, and pet insecticides to consumer markets.

Table 8-15. Major Suppliers Distributed by Wyatt-Quarles, 2016

Product category	Supplier
Fertilizers	Bonide
	VPG (Ferti-lome)
	Monterey Lawn & Garden
	Scotts
	The Jobe's Company
	St. Gabriel Organics
Soils and soil amendments	Black Gold
	Espoma
	Michigan Peat
	Sun Gro Horticulture
	JRM Chemical
	Premier
Rodenticides	Scotts
	Loveland
	United Industries (Pursell)
	Woodstream
Pet insecticides	VPG (Ferti-lome)
	Control Solutions
	PBI-Gordon
	Southern Agricultural Insecticides
	PIC Corporation
	Central Garden & Pet

TERRITORY

Wyatt-Quarles Seed Co. distributes within a 300-mile radius in North Carolina, Virginia, and South Carolina. The company services several dealers in these areas. It has seven outside sales representatives to meet customer requirements in these areas and eleven inside sales representatives.

FACILITIES

The company's warehouse is located at its headquarters in Garner, NC, which was expanded by 18,000 sq ft in 1987.

ADVERTISING

The company conducts co-op advertising with selected retailers and is a member of the Garden Master Group, a regional lawn and garden marketing program.

MANAGEMENT AND PERSONNEL

Wyatt-Quarles Seed Company employs 48 full time employees, with 18 sales representatives.

Table 8-16: Key Management Personnel for Wyatt-Quarles Seed Company

Individual	Position
Chuck Wyatt	President
V. Charles Wyatt	Chairman, President, Treasurer
Joseph G. Moore	Vice President, Sales
Sue Jennings	Purchasing Director
Mark Smith	Sales and Marketing Manager

9. SUPPLIERS

THE ANDERSONS, INC.

OVERVIEW

The Andersons, Inc. is a public limited company, established in 1947. The company began its operations as Andersons Truck Terminal for the grain industry. It was formed with the aim of helping farmers to get grains to the market. It is engaged in the merchandising, production, and distribution of products for the agriculture industry in North America.

The Andersons is a diversified agribusiness company and retailing company and is a leader in the regional grain merchandising and agricultural plant nutrient distribution. Its strong position in these basic businesses has allowed the company to diversify into rail leasing, turf-care products, and general merchandise retailing. It also supports agricultural education and advancements of agricultural practices. The Andersons organizes its businesses into five strategic groups: Grain and Ethanol, Plant Nutrient, Retail, Rail, and Turf and Specialty. The company is planning to exit its retail business and close its stores by the end of 2017.

In the 1960s, the company had installed the largest steel tank grain storage system in Ohio. Currently, the company operates nearly 40 grain elevators in eight states of North America. The storage capacity stands at 150 million bushels. The company has also acquired the grain and liquid storage facilities in Clymers, Seymour, and Loganport, among others. The Andersons has largely expanded its operations in the United States since its inception. It is focused on diversifying its business units into territories in Texas, Tennessee, and central Michigan. The Andersons, along with Lansing Trade Group, acquired Thompsons Limited, a grain and food grade bean handler in Ontario. The breadth of the products and services that Thompsons provides to its grain customers is expected to complement The Andersons' grain and nutrients businesses.

The company invested in ethanol to strengthen its core competencies in grain operations, and commodity processing. It operates 4 ethanol plants for LLC's in Michigan, Ohio, Indiana, and Iowa. The Andersons Albion Ethanol LLC facility in Michigan manages around 55-million-gallon dry mill fuel ethanol that requires 20 million bushels of corn to produce 155,000 tons of dried grains annually. In 2015, the company nearly doubled its Michigan facility to produce more ethanol. The Andersons Clymers Ethanol LLC in Indiana was introduced in 2007. It manages nearly 110 million gallons of ethanol. The Ohio-based facility has a capacity of 110 million gallons. The annual production capacity of the Iowa-based plant is nearly 55 million gallons.

The Plant Nutrient Group is a formulator and distributor of nutrients and corn-based products. The company has an extensive range of dealers who provide customized products to customers. It offers specialty nutrients and formulations to the turf and horticulture markets. The corncob-based products are sold to the laboratory animal bedding market. The company has 42 facilities in the United States that formulate, store, and distribute nearly 2 million tons of nutrients and corn-based products. The company is aiming at expanding its business operations at different locations to cater to the demand of customers. In 2013, the company purchased the granular manufacturer Cycle Groups' assets. This move by the company is in line with its strategy to mark the presence of its Turf & Specialty business in wide geographical locations. The company merged its Turf & Specialty and Plant Nutrient Groups in 2014.

The Rail Group constitutes of a fleet of railcars and locomotives that the company leases and sells. The company has invested in the Iowa Northern railway and with its extensive component capabilities it is meeting the demand of the market. The company provides repair, maintenance, and renovation solutions. It has invested in a paint and blast shop in Ohio that provides quality workmanship. Moreover, it operates two tank car certified facilities in Ohio and Kansas City. These facilities provide solutions such as inspections, repairs, alterations, and tank car cleaning services. The Fabrication shop manufactures material handling equipment and structural steel. The Andersons provides complete solutions from painting to delivery of the finished product. In 2013, the company acquired Mile Rail, a railcar repair and cleaning service provider. The acquisition helped the company to expand its geographical presence. The acquisition includes two satellite locations in Indiana and Nebraska coupled with the mobile units in central Midwest. The company has also introduced a new railcar paint facility in Maumee in 2013. The new facility is expected to ease the shortage of services and meet the demand for quality railcar painting.

The Retail Group is constituted of general stores and mower centers. The company currently has four stores in Maumee, Toledo, Columbus, and Ohio. These stores provide home décor including bedding, kitchen ware, furniture, and mattresses, among other products. The mower center offers power equipment. However, the company announced its plans to exit the retail business and close its stores by the end of 2017. This is because the company has experienced huge pre-tax losses in excess of \$20 million in the past eight years. Since then, the company has closed three stores and invested in other stores in order to maintain the retail segment. However, due to changing consumer preferences, sales have declined and are expected to decline in the future.

SALES AND PROFITS

The overall revenue of The Andersons witnesses a decline of 6.5% as compared to 2015. This is primarily due to falling oil prices that affected the company's ethanol business. Moreover, the company's plant nutrient business was adversely affected by rains during the planting season. The rains unfavorably affected fertilizer application rates. However, the Rail Group offset the losses incurred by the Plant Nutrient and Ethanol Group. The Grain Group witnessed a decline in sales as compared to 2015, as a result of decrease in commodity prices. The decline in prices of ethanol led to reduced sales of the Ethanol Group. Revenues of the Plant Nutrient Group increased because of an acquisition made by The Andersons in 2015. The Rail Group witnessed an upsurge in sales and merchandising revenue due to the increase in repair and lease revenues. The overall sales of The Andersons decrease from \$4,198.5 million in 2015 to \$3,924.8 million in 2016.

Table 9-1: The Andersons' Sales by Business Segment, 2016

Business segment	\$ Million
Grain Group	2,357.2
Ethanol Group	544.6
Retail Group	134.2
Plant Nutrient Group	725.2
Rail Group	163.6
Total	3,924.8

The company's strategy is to expand and mark its presence in every possible region. To accomplish this, it has been acquiring other companies and using their expertise to deliver quality products and services. The total sales as well as the gross profit of the company decrease from 2015 due to higher raw material costs. The company plans to launch more proprietary products in the lawn business in the coming years and expect more increase in revenues from the lawn business. Professional products hold around 80% of the division's total sales, with the remaining 20% to the consumer markets.

Sales of consumer fertilizers and pesticides for The Andersons are estimated at \$43.2 million in 2016. Of this total, about 50% is attributable to the company's own proprietary consumer brands, and the remaining 50% is third-party brands.

Table 9-2: The Andersons' Estimated Sales of Consumer Pesticides and Fertilizers for Proprietary and Third-party Brands, 2016

Product category	\$ Million	% Of total
Proprietary brands	21.6	50
Third-party brands	21.6	50
Total	43.2	100

CONSUMER PESTICIDES AND FERTILIZERS

The Andersons provides complete solutions from crop nutrition to the soil health. The Consumer Lawn business began as an outgrowth of agricultural fertilizers. The company produces granular fertilizers as well as some liquid products in the United States. It is the premier supplier of pesticides on carriers (both fertilizers and inerts). This manufacturing and formulation expertise was used to expand into products for professional and consumer use. The Andersons is well known for its carrier application technology, manufacturing the basic carrier, supplying carrier formulations, and also producing a range of products for its own use, as well as use by third parties.

The Andersons has introduced value-added products for professional markets, including dispersible golf course fertilizer. However, new product development is limited in the consumer pesticides and fertilizers market. The company has been focusing on acquisitions to increase its market reach and broaden its product portfolio. In 2015, the company acquired Kay Flo Industries to expand its wholesale and specialty fertilizer business. Kay Flo is among the leading manufacturers and formulators of micronutrient-enriched plant nutrients. The Andersons aims to increase its national sales and distribution network.

In addition to its third-party manufacturing business, The Andersons markets fertilizers, granular pesticides, and fertilizer-pesticide combination products under its own brand names. These brands each incorporate several products for lawns and gardens that include fertilizers and fertilizer combinations with pesticides. They are primarily sold to smaller retailers in the Midwest and on the East Coast. The company's philosophy for its own brands is to sell to smaller retailers that cannot justify the cost of establishing their own brand. The Andersons is adept at finding smaller retailers and convincing them of the advantage of selling one or two quality Andersons brands in place of marketing their own or a national brand.

The acquisition of Kay Flo provides the plant nutrient group with additional product lines. The company now offers liquid fertilizers under the brand PureGrade that provides nutrients for crops. The PureGrade liquid fertilizers comprises of both low-salt starters as well as low-salt foliar fertilizers that are used to prevent nutrient deficiencies and regenerate plants. The company provides fertilizers under the brand name Contec DG. The product disperses into the soil and maximizes the nutrient uptake by the roots. The fertilizers offered by the company are used to improve efficiency and increase yields. Other brands offered by the company incorporate several products for lawns and gardens that include fertilizers and fertilizer combinations with pesticides. The Andersons is proficient at finding smaller retailers and convincing them of the advantage of selling one or two quality Andersons brands in place of marketing their own or a national brand. The company also offers combinations of fertilizers and herbicides.

MARKETING POLICIES

The Andersons promotes its consumer fertilizers and pesticides in several ways:

- Directly through its own retail stores (being phased out by the end of 2017)
- Through other retailers and independents
- Indirectly through relationships with retailers by manufacturing their store brands
- By contract, as a contract manufacturer for major brands

The Andersons has distributors spread across Alabama, Alaska, California, Delaware, Illinois, Iowa, Texas, and Washington, among other states. The company has leveraged its Eastern Corn Belt wholesale distribution and retail capabilities. The company also sells fertilizers for “do-it-yourself” application to small and independent retailers. It also offers contract manufacturing of fertilizers.

The Andersons introduced a Turf Nutrition Tool (TNT), which is useful in planning of annual plant health by the turf managers. This significantly helps in optimizing the turf nutrition budgets.

ADVERTISING

The company states that it uses magazine, newspaper, and some television and radio advertising and provides cooperative advertising funds and point-of-purchase displays to retailers to support its brands. It has virtually no traceable media expenditures for consumer pesticides and fertilizers.

FACILITIES

The Andersons' Turf and Specialty Group's manufacturing facilities are strategically located in the heart of the U.S. turf market. The plant nutrient group formulates, stores, and distributes nutrients through its strategically located facilities. It has its manufacturing facilities in Webberville, Maumee, Walton, Logansport, Carey, and Seymour. Manufacturing of both branded and exclusive-label consumer fertilizers are performed at facilities in Bowling Green, OH, Maumee, OH, Montgomery, AL, and Delphi, IN. The company manufactures, packages, and distributes nutrient and specialty products through its facilities. Its wholesale facilities distribute nearly 2 million tons of dry and agricultural nutrients. The Andersons has around 1,833 full-time employees and 822 part-time employees.

OUTLOOK

The Andersons continues to focus on the plant and nutrient group with in-house research and development activities targeted towards professional products, with a vision to upgrade its consumer products. The company has been expanding its business operations and acquiring other major players to widen its product portfolio and capture a larger share of the market. For example, the acquisition of Kay Flo Industries by the company increases the liquid fertilizer capacity by 26%. The total storage capacity of liquid nutrients is nearly 5.6 million tons in 2016. The Andersons' consumer fertilizer and pesticide sales are expected to grow by 1.5% per year.

Table 9-3: The Andersons' Consumer Pesticides and Fertilizer Outlook, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	43.2	-
2021	46.5	1.5

AVON PRODUCTS

OVERVIEW

Avon Products is a multi-level marketing company founded in 1886. The company is a manufacturer and marketer of beauty and personal care products worldwide. The company's primary product categories include: Color, which consists of colors for lips and eyes; Skincare, which consists of wide range of products for skin protect, nourishment, and solutions; Fragrance; and Personal Care; Hair Care; and Jewelry. Avon's insecticide products are included within the Personal Care category under the Skin-So-Soft brand.

Avon has sales operations in 57 countries, including the United States, and distributes its products in 18 more countries and territories. The company markets its products through direct selling and independent representatives, pioneering this sales channel and eventually spawning hundreds of imitators in many different industries. As of early 2011, Avon's direct selling network included approximately 6.5 million active independent Avon Representatives. In certain markets, the company also utilizes distributorships. Avon currently maintains sales operations in 66 countries and territories.

SALES AND PROFITS

Against the backdrop of the global economic crisis, Avon's growth strategy was based on its comprehensive multi-year turnaround plan to decrease expenses and reinvest those savings in initiatives that will generate revenues and increase profitability over the long run. Avon reports net sales of \$5.5 billion in 2016. Operating profit increased to \$321.9 million from \$165 million in 2015.

Beauty and cosmetics items are the mainstay of Avon's business, accounting for around \$4.1 billion in sales in 2016. The Fashion & Home segment, the second largest category of Avon, experiences net sales of \$1.4 billion in 2016.

Table 9-4: Avon Products' Sales by Business Segment, 2016

Business segment	Net sales (\$ Million)
Beauty	4,119.1
Fashion & Home	1,446.2
Net sales from other reporting segments and business activities	13.5
Total	5,578.8

Avon is present in the consumer fertilizers and pesticides market with its Skin-So-Soft Bug Guard Plus line of insecticides, which are offered in the Beauty division. Sales of Skin-So-Soft Bug Guard Plus are estimated at \$68 million in 2016.

On a regional basis, Europe, the Middle East and Africa, and South Latin America account for Avon's sales of \$2.1 billion each in 2016, followed by North Latin America and Asia with \$829.9 million and \$556.0 million in 2016, respectively.

CONSUMER PESTICIDES AND FERTILIZERS

Avon Products' product line named Bug Guard Plus has a number of consumer insecticide products. The company's Skin-So-Soft product line was initially intended for moisturizers in the 1970s. Over time, this product line has been extended to a variety of products including makeup remover, nail softener, wood polish, glue remover, ink cleanser, paint remover, shoe polish, baseball glove softener, and insect repellant. The insect repellant product gained a lot popularity particularly in conjunction with the product's ability to also relieve itching caused by insect bites. Avon eventually introduced a product range branded Skin-So-Soft Bug Guard Plus to repel insects. The Bug Guard Plus products continue to have the Skin-So-Soft name for brand recognition.

Avon's Skin-So-Soft Bug Guard Plus is a relatively new product line of 10 products:

- Skin-So-Soft Bug Guard Plus Gentle Breeze
- Skin-So-Soft Bug Guard Plus Picaridin Aerosol Spray
- Skin-So-Soft Guard Plus Anti-Itch Spray
- Skin-So-Soft Guard Plus Picaridin Family Size Pump Spray
- Skin-So-Soft Bug Guard Plus Expedition SPF 30 Aerosol Spray
- Skin-So-Soft Bug Guard Plus Expedition SPF 30 Pump Spray
- Skin-So-Soft Bug Guard Plus SPF 30 Cool 'n Fabulous Disappearing Color Lotion
- Skin-So-Soft Bug Guard Plus SPF 30 Gentle Breeze Lotion
- Skin-So-Soft Bug Guard Plus Picaridin Pump Spray
- Skin-So-Soft Bug Guard Plus Picaridin Towelettes

The products contain picaridin, which was developed by Bayer an alternative to DEET. Picaridin has been used worldwide since 1998 and has been recommended by the World Health Organization as the best protection against malaria. These products provide repellency against mosquitoes, ticks, gnats, and other biting insects.

MARKETING POLICIES

Avon largely relies upon its representatives to market its products, providing them with extensive support in the form of brochures, sales kits, trial sizes, and other materials. In order to help representatives reach new customers, they are supported with specially designed sales aids, promotional pieces, customer flyers, and television and print advertising. The representatives are motivated through special incentive programs that reward superior sales performance.

In 2007, the company launched a comprehensive marketing campaign called "Hello Tomorrow," supporting both the brand and the direct-selling channel. As part of "Hello Tomorrow," Avon's first global integrated marketing campaign, the company signed actress Reese Witherspoon to a multi-year contract as its Global Ambassador. The company also increased investment to upgrade the quality and size of the campaign in many markets.

The company has made significant investments to understand the financial return of field incentive programs. Periodical sales meetings with representatives by the district or zone sales managers keep them abreast of product line changes, sales techniques, and provide recognition for sales performances.

ADVERTISING

Although Avon has recently increased its advertising support, this is largely focused on new, innovative products and highly popular current lines. The Skin-So-Soft Bug Guard Plus products do not receive significant promotional support.

FACILITIES

Avon Products maintains an extensive global network of facilities. In the United States, manufacturing facilities are located in Morton Grove, IL, and Springdale, OH. Domestic distribution centers are located in Atlanta, GA, Glenview, IL, Newark, DE, and Pasadena, CA.

The company's research and development facility is located in Suffern, NY. Avon has satellite research facilities located in Argentina, Brazil, China, Mexico, Poland, and South Africa. In 2010,

the company invested in a research and development facility in Shanghai, China, to develop products to better meet Asian consumers' needs.

Avon Products also leases office space in two locations in New York City and owns property in Rye, NY, for its executive and administrative offices. In 2009, the company opened its new distribution center at Zanesville, OH. The new facility will be fully staffed and operational by mid-2010. With the opening of this new facility, Avon is phasing out distribution branches in Newark, DE, and Glenview, IL.

Avon Products employs approximately 26,400 people worldwide. Of these, approximately 600 are employed in the United States and 25,800 in other countries.

OUTLOOK

Over the next several years, Avon Products is expected to post strong annual gains in the single digit. Growth will be driven by an increasing focus on marketing and promotion, coupled with introductions of innovative new products and growing consumer awareness of and demand for anti-aging products. A growing network of independent sales will also help expand overall sales. However, the Skin-So-Soft Bug Guard Plus is unlikely to benefit from this because of a relatively lack of support by Avon specifically for these products. In general, repellents are seeing strong sales as a result of the growing awareness of mosquito-borne diseases, such as West Nile Virus and Zika virus. As this occurs, sales of Avon's consumer insecticides are expected to rise by 1.5% per year to \$73.2 million in 2021.

Table 9-5: Avon Products' Outlook for Insect Repellents, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	68.0	-
2021	73.2	1.5

BACON PRODUCTS CORPORATION

OVERVIEW

Bacon Products, founded in 1944, is headquartered in Chattanooga, TN. It owns an on-site manufacturing and laboratory complex. The company is engaged in manufacturing of pesticides. It manufactures two lines of consumer pesticides: the Eagles-7 line of household insecticides and the My Buddy line of pet products. Bacon Products also offers a line of bird products including hummingbird feeders and nectar called Hummer's Galore.

The company has changed the composition of its products to comply with government regulations. The ingredients of the Eagles-7 line have been changed to improve the product mix.

SALES AND PROFITS

The overall revenue of the company is around \$10 million in 2016. The Eagles-7 product line accounts for the majority of the revenue generated by the company. All products are manufactured under the company's own brands for consumers, with no contract manufacturing or professional product lines.

The Eagles-7 product range contributes approximately 60% of sales, or \$6.0 million. The My Buddy product line accounts for 30%, or \$3.0 million. The Hummer's Galore range of bird products accounts for the remaining 10% of sales. Sales of consumer pesticides as covered in this report are estimated at around \$9.0 million in 2016.

CONSUMER PESTICIDES AND FERTILIZERS

The company's consumer pesticides include the Eagles-7 insecticides and My Buddy pet products. The Eagles-7 brand of Bacon Products Corporation has a line of 18 product members. It includes:

- Mouse Bait, a safe anti-coagulant containing warfarin for household use
- Wasp & Hornet Destroyer, a spray blast for wasps, hornets, and yellow jackets
- Platinum Flying Insect Spray, suited for house flies, black flies, and gnats
- Spray-Kill with Nylar, prevents residential, commercial, industrial, and institutional structures from insects and cockroaches
- Insect Repellant, contains DEET and protects from ticks, and other flying insects
- Platinum Plus Fogger, a more powerful fogging product containing Nylar
- Total Release Fogger, a water-based fogger that penetrates through areas for insecticidal action
- Fire Ant Destroyer, a deltamethrin powder for treating up to 30 mounds
- Ant, Roach and Spider Spray, a water-based spray that prevents plants and trees from aphids and spider mites
- Last Step Mouse Trap, is made up of steel and features a larger bait area
- Best Mouse Trap, is made up of hard plastics and can be reused
- Last Step Glue Trap, a non-toxic alternative for pest control
- Mighty Glue Trap, fit to be used in meat and poultry establishments
- Septic Clean, a blend of bacteria and enzymes for rapid waste degrading
- Fresh Drain, used for drain and garbage disposal

The My Buddy product line comprises of organic shampoos, and finishing sprays to aid in the control of fleas and ticks. The My Buddy line has Organic Shampoo with d-limonene to prevent against fleas and ticks and Organic Dip to aid in the control of fleas and ticks.

MARKETING POLICIES

The consumer pesticides produced by Bacon Products are widely available in hardware, supermarket, mass merchandise, and home stores across the United States. All products are sold by the company's approximately 20 manufacturer representatives. Bacon Products provides various kinds of marketing support, including product brochures, retail displays, and co-op advertising materials. There are around 10,000 independent retailers across the United States that provide Eagles-7 Septic Clean.

ADVERTISING

There is no TME reported for Bacon Products in 2016.

FACILITIES

Bacon Products is headquartered in Chattanooga, TN. It has warehouse storage facilities, shipping and receiving facilities, chemical manufacturing facilities, filling machinery facilities, labeling, and packaging facilities in Chattanooga. It employs around 19 people. The company's distribution facilities are also located in Chattanooga.

OUTLOOK

The company is not a leader in its market segments and rather offers secondary products. The sales growth is mitigated by the company's lower brand awareness among the consumers. Bacon Products needs to focus on creating brand awareness in order to generate more of a customer base, and thus revenues.

Bacon Products is expected to witness moderate growth in its sales over the next five years. Overall sales of Bacon Products' consumer chemical products formulated as rodenticides, repellents, and insecticides are expected to expand by 1.5% per year.

Table 9-6: Bacon Products' Outlook for Pesticides by Product Category, 2016 to 2021

Product category	\$ Thousand		Average annual growth, %
	2016	2021	
Insecticides	6,300	6,790	1.5
Repellents	2,000	2,200	2.0
Rodenticides	700	745	1.5
Total	9,000	9,735	1.5

BAYER AG

OVERVIEW

Publicly traded Bayer AG of Leverkusen, Germany, is a leading manufacturer of healthcare products, polymers, chemicals, and agricultural products. The company entered the market for consumer pesticides and fertilizers in 1996 with the introduction of an imidacloprid-based topical flea-control insecticide called Advantage, and four years later launched the Bayer Advanced lawn, garden, and household pesticide product lines. In 2007, Bayer acquired Schering AG, a Germany-based leader in the development of medicines for human use, for €16.9 billion.

In 2016, SBM Développement, based in France, acquired Bayer Garden and Bayer Advanced businesses in both Europe and North America, and it has created a separate business unit named SBM Life Science to manage the consumer pesticide market. SBM Life Science provides plant protection, home and garden care products. This leaves Bayer's participation in the consumer pesticide and fertilizer market only through its companion animal flea and tick product line, including the brands Advantage, K9 Advantix II, Advantus, and Seresto.

In the United States, Bayer AG operates through Bayer Corporation, which includes sales from all of the operating segments in which the parent company is active.

Table 9-7: Bayer AG's Sales by Business Segment, 2016

Business segment	€ Million	% Of total
Health care	22,457	48.0
Crop science	9,915	21.2
Covestro	11,826	25.3
Reconciliation	2,571	5.5
Total	46,769	100.0

SALES AND PROFITS

In 2016, the Bayer Group reports total sales of a rounded €46.8 billion (approximately \$51.8 billion), on which the company realized a net income of approximately €4.5 billion.

Table 9-8: Bayer AG's Total Sales, 2006 to 2016

Year	€ Million-a		%	
	Sales	Net profits	Margin on sales	Return on equity
2006	28,956	1,683	5.8	11.5
2007	32,385	4,711	14.5	32.2
2008	32,918	1,719	5.2	10.4
2009	31,168	1,359	4.3	7.7
2010	35,088	1,301	3.7	6.9
2011	36,528	2,470	6.8	13.0
2016	46,769	4,531	9.7	7.3

a- 2016 average exchange rate: €1.00 = \$0.9038.

CONSUMER PESTICIDES AND FERTILIZERS

Bayer's sales of consumer pesticides in the pet segment are conducted through its Animal Health division, which is part of the Health Care business unit. In addition to several anti-infectives, anti-arthritics, and endoparasiticides, the company offers these major insecticide products: Advantage, Advantage II, K9 Advantix, and Seresto.

Advantage is a topical insecticide containing imidacloprid that kills adult fleas on dogs and cats. It kills from 90% to 100% of adult fleas on pets within 12 hours of application and kills reinfesting fleas within two hours of contact. Advantage continues to provide effective control for 30 days. Dispensed only through licensed veterinarians, Advantage is available in separate packages for cats, dogs, and large dogs. In early 2006, Bayer introduced prescription-only Advantage Multi for Cats and Advantage Multi for Dogs. The products combine the flea control of Advantage with a preventative for heartworm disease and treatment and control of intestinal nematodes (hookworms and roundworms) in one monthly topical solution containing imidacloprid and moxidectin.

Launched in North America in 2003, K9 Advantix is a once-a-month topical product containing imidacloprid and permethrin for use against mosquitoes, ticks, and fleas. It effectively kills mosquitoes and ticks before they bite and stops fleas from biting, killing them within one hour. K9 Advantix is licensed for use on dogs and puppies and available only through veterinarians.

In 2013, Bayer announced the launch of Seresto, an effective, eight-month tick and flea preventive in an innovative collar form, at the North American Veterinary Conference in Orlando, FL. Seresto offers pet owners the performance they expect from their monthly topicals, but delivers the active ingredients in a, convenient collar form. With eight months of effective protection against fleas and ticks on dogs or cats, Seresto is a long-lasting treatment alternative for pet owners (bypassing monthly applications of topical spot-ons).

Seresto features a sustained release technology which provides a continuous release of imidacloprid and flumethrin in low concentrations. Seresto kills fleas within 24 hours and ticks within 48 hours after initial application. Reinfesting fleas are killed within two hours and reinfesting ticks are killed in as quickly as six hours.

Bayer recently announced the launch of Advantus, based on the active ingredient imidacloprid, the first FDA-approved soft chew for fleas. Advantus is for dogs and provides fast knockdown, starting to kill fleas within one hour. Because Advantus starts killing fleas within one hour, animal shelters can use the product in-shelter for dogs that come in with a flea infestation. Advantus is available without a prescription, which allows retailers to serve dog owners interested in an oral flea treatment.

U.S. sales of consumer pesticides in the Advantage, K9 Advantix, Advantus, and Seresto lines are estimated at \$238.5 million in 2016.

MARKETING POLICIES

Bayer's flea and tick brands for insect infestations on pets are marketed through distributors by company sales representatives exclusively to veterinarians. In total, more than a dozen Bayer sales representatives market these brands. Bayer has expanded its sales channel for animal health products and has begun selling some of its flea and tick lines directly to pet specialty retailer and pet specialty Internet websites since 2010.

ADVERTISING

In 2016, Bayer spent slightly over \$50 million on advertising for its flea and tick product line. Network TV, followed by cable TV and syndicated TV, are the company's leading forms of advertising.

Table 9-9: Traceable Media Expenditures by Bayer Brands for Consumer Products, 2016

Brand/product	\$ Thousand						Total
	Network TV	Spot TV	Syndicated TV	Cable TV	Radio	All other	
Seresto	12,273.1	1,982.2	1,517.8	1,989.2	1,040.6	1,200.4	20,003.3
K9 Advantix II	8,560.5	2,311.6	3,373.6	4,739.3	-	233.5	19,218.5
Advantage II/ Advantage Multi	4,743.7	-	2,024.8	2,157.7	1,667.0	217.1	10,810.3
Total	13,304.2	4,293.8	5,398.4	8,886.2	2,707.6	1,651.0	50,032.1

FACILITIES

The Bayer Group is headquartered in Leverkusen, Germany, while Bayer Corporation's U.S. headquarters is based in Pittsburgh, PA. Advantage and K9 Advantix are marketed in the United States by Bayer Animal Health, which is located in Shawnee, KS. That facility includes a recently completed \$60 million pharmaceutical production plant, which is one of the most technologically advanced veterinary medicine production facilities in the country.

OUTLOOK

With continued expansion of pet superstores and online pet product sales, coupled with ongoing increased demand for companion animals in American society, pet product sales are likely to continue to increase in the near term. Through 2016, Bayer's overall U.S. consumer pesticide sales are expected to grow by an average of 3% per year to reach \$276.5 million.

Table 9-10: Bayer's Outlook for Consumer Pesticides and Fertilizers, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	238.5	-
2021	276.5	3.0

BENGAL PRODUCTS INC.

OVERVIEW

Bengal Products Inc. is a U.S.-based company established in 1985. It is engaged in marketing and supplying consumer insecticides. The company is based out of Baton Rouge, LA. The company aims at providing insecticide solutions that are effective against fleas, ticks, and other indoor and outdoor bugs.

SALES AND PROFITS

Bengal Products is a privately held company owned and operated by a family. As it is a privately held company, the financial information of the company is not disclosed. Its sales are estimated at approximately \$13.4 million in 2016.

CONSUMER PESTICIDES

Bengal Products markets household pesticides for consumer use under the Bengal label. The company's product line consists of a wide range of principal insect-control products that are divided into five product groups: roaches, indoor bugs, fleas and ticks, outdoor bugs, and fire ants.

Roach products includes Roach Spray, Gold Roach Spray, and Foggers containing Nylar insect growth regulator, Non-Flammable Dry Foggers and Concentrated Roach and Flea Fogger. Indoor sprays include Fly Insect Killer for mosquitoes, flies, gnats and moths; water-based Ant and Spider Killer, water-based Kitchen and Bathroom Bug Killer, Insecticide Concentrate, Non Flammable Dry Foggers, and Concentrated Roach and Flea Fogger. The products offered by the company are also used to kill other insects. The flea and tick products include Flea & Tick Shampoo and Flea & Tick Spray that contains Nylar insect growth regulator. Flea & Tick Fogger is used to control heavy flea infestation and to kill fleas, ticks, ants, flies, lice, and other insects. It does have an odor and three cans will treat up to 9,000 cu ft for flies. Full Season Flea Killer Plus is another product which is used for bedding, upholstery, and carpet. Flea & Tick Barrier Granules, based on bifenthrin, is designed for home barrier treatment.

The company's Outdoor Bugs product line has two products for wasps and hornets: a Non-Conductive Wasp & Hornet Killer, which is a solvent-based shotgun spray; and Foaming Wasp & Hornet, which is a water-based insect kill spray. This product line includes Yard & Patio Outdoor Fogger which treat screens, outdoor furniture, bushes, and other surfaces where insects may land; Flying Insect Killer for mosquitoes, flies, gnats, and moths; Mosquito Repellent which repels mosquitoes, biting flies, gnats, chiggers, ticks, and fleas; and Ant & Spider Killer. Moreover, insecticide concentrates and termite killing concentrates are also provided by the company. These concentrates are used to kill pests on indoor and outdoor surfaces. They are mostly recommended for commercial and industrial use. Termite Killing Concentrate is used to kill termites, carpenter bees, and carpenter ants.

Table 9-11: Bengal Products' U.S. Sales of Pesticides and Related Products to Consumer Markets by Product Category, 2016

Product category	\$ Thousand	% Of total
Roaches	1,608	12
Indoor bugs	2,412	18
Fleas and ticks	4,020	30
Outdoor bugs	2,680	20
Fire ants	2,680	20
Total	13,400	100

MARKETING POLICIES

Bengal supplies its products generally through distributors and wholesalers to the national chains and to leading home centers, pharmacies, supermarkets, hardware stores, lawn and garden centers, and feed stores. Its products are sold mostly at retail stores in the southern part of the United States where insects are a major problem. Nearly 70% of the company's sales are in the Mid Atlantic, Southeast, and South to Central regions, taken together, where the weather conditions favor pest population. The remaining 30% of company's sales are scattered in other parts of the United States.

Bengal's products are also available for direct order through its website bengal.com. The company also markets via social media, such as Facebook.

ADVERTISING

The company promotes its products in collaboration with retailers and distributors. Consumer advertising includes the tagline, "Bengal Products Really Work!" along with a 60-day money-back guarantee. Bengal has TME in 2016 of \$78,100 for insecticides and roach sprays, all spent for spot TV advertisements.

FACILITIES

Bengal Products is located in Baton Rouge, LA, and has about 40 employees engaged in marketing, distribution, and administration.

OUTLOOK

Until 1993, sales of Bengal Products had been growing rapidly in the South based upon word of mouth, with relatively low expenditures for advertising and promotion. The company developed into a strong regional supplier of household insecticides. However, this continued focus on the Southern states may constrain greater growth. Sales in the flea and tick category have been slightly better than others. Throughout the forecast period, Bengal Products' sales are expected to grow at an average annual rate of 3.0%.

Table 9-12: Bengal Products' Outlook for Consumer Pesticides, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	13.4	-
2021	15.5	3.0

BONIDE PRODUCTS

OVERVIEW

Bonide Products is located in Oriskany, NY, and was established in 1926 by James H. Wurz. The company is privately owned by the third generation of the Wurz family. Bonide Products manufactures and markets a wide variety of pest control and lawn and garden products for consumer and professional markets. The company's products include insecticides, herbicides, baits, repellents, fungicides, rodenticides, and related products. The consumer product line, marketed under the Bonide label, consists of around 235 products, most of which are available in several packaging options. Bonide Products also manufactures a wide range of products under private labels for other suppliers.

SALES AND PROFITS

Since its inception in 1926, the company has witnessed growth in terms of its size and sales. Bonide operates a state-of-art manufacturing facility and is strategically increasing its presence to capture a larger share of the market. Consumer products account for approximately 70% of Bonide's sales, while the remaining 30% is made up of contract manufacturing for professional pest control companies. Consumer product sales are divided among insecticides, herbicides, fungicides, rodenticides, and other products, such as repellents and fertilizers. Insecticides remain the largest product category with 50% of the consumer business. It is expected to witness growth because of acquisitions and its initiative to expand beyond its traditional regional focus of the U.S. Northeast. The company's sales are estimated at \$28.6 million in 2016.

CONSUMER PESTICIDES AND FERTILIZERS

Bonide offers a broad line of consumer products that are generally well-regarded for their high quality and ability to address virtually any consumer pest problem. Bonide has a wide range of insecticides, herbicides, fungicides, rodenticides, repellants, and fertilizers distributed in the categories: Household Pest Control, Garden Naturals, Insect Control, Weed Control, Disease Control, Repellants and Specialty, and Insect and Disease Combination Products.

The Garden Naturals collection consists of a range of products that are used to control and prevent destructive worms, leaf rollers, mealy bugs, and other insects from harming vegetables and flowers. The products include All Seasons Horticultural Spray Oil, All Seasons RTS, Bat Magic, and All Seasons RTU, among others. The Lawn Care Control category consists of products that are used to kill lawn insects. The products include Fall Winterizer Lawn Food, Insect & Feed, Lawn Seed Starter, and Lawn Weed Killer, among others. The Insect & Feed product contains a slow release fertilizer. These products contain iron and sulfur that strengthen plants. The Barn & Stable category includes spray used on and around cattle, horses, and other animals to control flies, fleas, ticks, and other insects. It includes products such as Revenge Barn & Stable Fly Spray, Revenge DUSTON Livestock & Dog, Revenge Equine Fly Spray, and Revenge Fly Catchers, among others. The Grass Seed category includes turf grass varieties for dense shade areas. The products offered under this category rapidly repair thin and bare spots under the tree cover. The Ant Control product line includes products that are used to kill roaches, crickets, slugs, snails, and earwigs. The products offered under this category include Revenge Ant Bait Granules, Revenge Ant Bait Liquid, and Revenge Ant Killer, among others. The Weed Control collection contains formulated products that are approved for organic gardening and are safe for pets and humans.

The company also offers products for rodent control. These products are used to trap mice, rats, snakes, and spiders, and include Mouse Magic and a line of Revenge traps.

In 2014, Bonide acquired the BurnOut line of natural weed killers from St. Gabriel Laboratories. BurnOut works extremely quickly to control weeds with a combination of natural ingredients including acetic acid and clove oil.

The current Weed Control category products include Brush Killer Bk-32 Concentrate, BurnOut Weed & Grass Killer Concentrate, BurnOut Weed & Grass Killer RTU, and Chickweed, and Clover & Oxalis Killer Concentrate, among others. The Disease Control category of products are used to protect plants and fruits from fungal diseases, and includes Fungonil, Captan, Copper Dust, and others.

Every year, Bonide reviews its product offerings, discontinuing lagging items and introducing new products that meet a consumer need. In 2014, Bonide introduced Bonified Expert Diagnostic Center, which is available to retailers who purchase eight of the company's expert assortments. This center has a microscope, monitor and Bonified Expert Problem Solver tool that has a plant database for plant related problems.

MARKETING POLICIES

Bonide's products are sold by independent lawn and garden retailers, regional chains, and some national chains on a regional basis. Bonide is focusing its efforts on expanding its sales force. Since 2013, Bonide has been hiring employees for its sales team. It has a national sales force that exclusively focuses on independent retailers. In July 2012, Bonide hired a National Sales Manager and Vice President to look after its sales development. In October 2013, the company appointed two sales managers to manage their Western Sales region. In February 2015, Bonide appointed six sales and merchandising experts for its national sales team. Furthermore, in March 2016, the company expanded its sales team by adding four territory sales managers in the Midwest, Northeast and Southeastern region. The sales members are responsible for assisting retailers to stay updated with market changes, advertising, merchandising and new products.

Bonide is working with current and future distributors to secure an improved flow of products to the marketplace.

ADVERTISING

Bonide's TME totals \$834,700 in 2016. Approximately \$250,000 is for Mosquito Beater, \$88,500 for Magic Mouse, approximately \$145,000 for herbicide products, \$152,800 for animal repellents, and the remainder for various insect, fungal, and mole control products. Advertisements purchased are in the form of newspaper ads or in-store displays.

The company has introduced a cell phone application called the DIY Control Center App. The application is easy to use and provides solutions to various plant-related problems. It also uses color-coded rail strips, fence banners, and header signs as a means of advertisement.

FACILITIES

Bonide operates out of an expanded 275,000 sq ft manufacturing and distribution facility completed in 2003. The facility also houses the corporate offices. The production area is state-of-the-art and includes liquid, dry, and granular production lines. As of December 2016, Bonide has 210 employees. It has its dealers located in various parts of the country.

OUTLOOK

Over the past several years, Bonide has experienced rather flat sales. The company continues to look to expand beyond its historic focus in the Northeast and has obtained product registrations in a rising number of states in other regions. The Bonified Dealer program and a continuing flow of new product launches are also contributing to growth.

Prior to the recession, Bonide was going strong with an average growth of 9.5% for consumer products. However, with the economic slowdown, sales have somewhat decreased in the last few years. Acquisitions, such as the BurnOut line of natural weed killers from St. Gabriel Laboratories, will help grow sales. Going forward, Bonide is expected to maintain an overall sales growth of 3.0% per year, on average, reaching \$33.3 million by 2021.

Table 9-13: Bonide's Outlook for Consumer Pesticides, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	28.7	-
2021	33.3	3.0

CENTRAL GARDEN & PET

OVERVIEW

Central Garden & Pet is a manufacturer, marketer, and innovator of lawn and garden products and pet supplies for consumer and professional use. The company's corporate office is located in Walnut Creek, CA. Central Garden & Pet was founded in 1931 and privately held until 1993 when it went public. William E. Brown, the previous owner and current chairperson of the board, still holds an interest sufficient for effective control in the company.

Central Garden offers products under two segments, namely, the Garden segment and the Pet segment. The products available under the Garden segment include proprietary and non-proprietary grass seed, wild bird feed, bird feeders, bird houses, and other herbicides, insecticides, and pesticides products. The company sells its products under brand names such as Pennington, The Rebels, Amdro, Sevin, and Ironite, among others. Under the Garden segment, Central Garden offers grass seed and soil supplements; weed, insect and pest control products; and wild and pet bird products. Additionally, it also provides innovative textures and colors for decorative pottery products.

The Pet segment consists of products for dogs and cats which include edible bones, cat food and treats, toys, pet carriers, grooming supplies and other accessories for birds, and specialty pets. It also provides animal and household health and insect control products for fish, reptiles, and other aquarium-based pets. The products are sold under the brands such as Adams, Four Paws, Bio Spot, Zodiac, and Avoderm, among others. Under this segment, the company provides animal and household insect control products; animal wellness products for flea and tick control, such as shampoos, dips, soaps, ear care sprays and mists, spray powders and foggers; and products for aquatic animals and reptiles, including aquariums, furniture and lighting fixtures, pumps, filters, water conditioners, food and supplements, and information and knowledge resources.

In 2014, Central Garden acquired certain assets of Envincio LLC, a wholly owned subsidiary of SantoLubes LLC. The acquisition enabled the company to be a major supplier and product innovator in the insecticides market.

In 2015, the company acquired pet bedding business of National Consumers Outdoors Corporation. The acquisition is in line with the company's strategy to build a product portfolio of growing businesses and enhanced its existing portfolio of pet products.

The company is also progressing by developing innovative products that keep them at a competitive edge in the consumer pesticide market. In March 2014, the company introduced BioSpot Active brand, a complete line of wellness products that provide flea and tick solutions for pet, home, and yard.

Central Garden & Pet has made a series of important acquisitions that have significantly increased the size of the company.

Table 9-14: Central Garden & Pet Acquisitions, 1997 to 2016

Company acquired	Description of acquisition	Date	Business segment
Weyerhaeuser Garden Supply	California and Arizona operations	1988	Lawn and garden
Weyerhaeuser Garden Supply	Remaining operations	1990	Lawn and garden
Matthews Redwood and Nursery Supply	Southern California lawn and garden distributor	1990	Lawn and garden
CGS Distributing	Colorado distributor	1992	Lawn and garden
ESCO Distributors	Lawn and garden distribution operations	1994	Lawn and garden
The Solaris Group, Monsanto	Agreement to become master distributor of Ortho, Roundup and Greensweep products	1995	Lawn and garden
Valley Pet Supply Inc.	Pet supplier in California, Washington and Oregon	1995	Pet
Kenlin Pet Supply	Pet supply products	1996	Pet
Longhorn Pet Supply	Pet supply products	1996	Pet
Commerce	Equity interest in Maryland lawn and garden distributor	1997	Lawn and garden
Ezell Nursery Supply Inc.	Distributor of lawn, garden, barbecue and patio products	1997	Lawn and garden
Four Paws Products Inc.	Pet products	1997	Pet
Sandoz Agro flea and tick business	Flea and tick protection business in the United States and Canada, re-named Wellmark International	1997	Pet
Kaytee Products	Manufacturer of bird and small animal food	1997	Pet
THF Publications	Manufacturer of dog chews and producer of pet books	1997	Pet
Pennington Seed	Largest producer and marketer of grass seed in the United States	1998	Lawn and garden
Norcal Pottery Products Inc.	Designer, importer and distributor of pottery	1999	Lawn and garden
Grant Laboratories	Manufacturer of consumer ant control products	1999	Lawn and garden
The Solaris Group, Monsanto	Agreement to become distributor of Ortho, Roundup and Greensweep products terminated	1999	Lawn and garden
Cedar Works	Equity stake in Cedar Works, producer of wooden bird feeders	2000	Lawn and garden
Unicorn Laboratories	Florida manufacturer of pesticides for animal health and lawn and garden markets	2000	Lawn and garden

(Continued)

Table 9-14: Central Garden & Pet Acquisitions, 1997 to 2016

Company acquired	Description of acquisition	Date	Business segment
Whites Pottery	Texas pottery company	2000	Lawn and garden
American Cyanamid	Consumer products Amdro and Image	2000	Lawn and garden
All-Glass Aquarium Co.	Manufacturer and marketer of aquariums and related products	2000	Pet
Garden Grow Co.	Lilly Miller and Cooke lines of pesticides and fertilizers	2000	Lawn and garden
Alaska Fish Fertilizer Co.	Fertilizer company	2000	Lawn and garden
Kent Marine Inc.	Marketer of saltwater aquarium supplements and conditioners	2004	Pet
New England Pottery Inc.	Marketer of decorative pottery and seasonal lighting	2004	Lawn and garden
Interpet Ltd.	British chemical and animal health company	2004	Pet
KRB Seed Co.	North Carolina provider of high quality grass seed	2004	Lawn and garden
Energy Savers Unlimited Inc.	Provider of specialty lighting for aquatic, reptile, and avian hobbyists	2004	Pet
Gulfstream Home and Garden	Exclusive marketer of consumer Sevin and Rootone	2005	Lawn and garden
Pets International	Supplier of small animal and specialty pet supplies	2005	Pet
Shirlo Inc.	Acquired exclusive marketing rights to etofenprox, an insect adulticide	2005	Pet/Lawn and garden
Farnam Companies	Manufacturer and marketer of animal health care products, including Biospot, Scratchex, Adams, and Bitefree brands	2006	Pet/Lawn and garden
Breeder's Choice Pet Foods Inc.	Marketer and manufacturer of all natural dog and cat food sold under the brands AvoDerm, Pinnacle, Active Care and Advanced Pet Diets	2006	Pet
Tech Pac, L.L.C.	Increased equity interest in supplier of branded insect control products in the lawn and garden market	2006	Lawn and garden
Ironite Products	Acquired the rights to the Ironite brand of soil supplements and associated intellectual property	2006	Lawn and garden
B2E Corporation, B2E Biotech LLC, and DLF Trifolium Oregon (dba "ASP Research")	With the assistance of Strauss Capital partners, acquired B2E Corporation (and related entities), a company specializing in the formulation and development of environmentally neutral chemicals to protect people and animals. Recently launched innovative mosquito control line	2007	Pet/lawn and garden
Envincio LLC	Product innovator in the insecticides market	2014	Lawn and garden
National Consumers Outdoors Corporation	The acquisition is in-line with the company's strategy to build a product portfolio of growing businesses and enhanced its existing portfolio of pet products	2015	Pet
Segrest Inc.	Purchases Segrest Inc., the leading wholesaler of aquarium fish, for a cash purchase price of \$60 million.	2016	Pet
K&H Manufacturing	Purchases K&H Manufacturing, a producer of premium pet supplies and the largest marketer of heated pet products	2017	Pet

SALES AND PROFITS

For the fiscal year ending September 2016, Central Garden & Pet Company reports net sales of \$1.8 billion, a growth of 10.8% from the sales of fiscal year 2015. Net income of the company in 2016 is reported at \$44.5 million.

The company's operating income reached \$129.4 million in 2016, an increase of 41.5% from the previous year. Central Garden strategically sells its business that are not profitable and focuses on enhancing the product portfolio of the products that are growing in the market. For example, the company sold its veterinary products division in 2016, which has not generated profits in the past few years.

Table 9-15: Central Garden & Pet's Historical Sales, 2012 to 2016

Year-a	\$ Million
2012	1,700.0
2013	1,653.6
2014	1,604.4
2015	1,650.7
2016	1,829.0
a- Fiscal year ending September 30.	

CONSUMER PESTICIDES AND FERTILIZERS

Pet Products

Central Garden & Pet is among the leading manufacturers of proprietary branded pet products and a distributor of a comprehensive selection of other manufacturers' brands.

Table 9-16: Central Garden & Pet's Sales and Income, 2012 to 2016

Year-a	\$ Million		
	Estimated net sales	Estimated income	% Of total company sales
2012	930.7	88	54.7
2013	888.2	96	53.7
2014	845.5	88	52.7
2015	894.5	99	54.2
2016	1,081.8	120	59.1
a- Fiscal year ending September 30.			

Proprietary consumer brands of pet products are divided into the following categories:

- Animal Wellness: Includes brands such as Adams, BioSpot, Farnam, Pre-Strike, Comfort Zone, Central Life Sciences, and Zodiac
- Dog & Cat: Includes brands such as Avoderm, Breeder's Choice, Four Paws, DMC, Pinnacle, Nylabone, TFH, and Cadet
- Equine: Includes brands such as Farnam, VitaFlex, and Horse Health Products
- Small Animal: Includes brands such as Kaytee and SuperPet
- Aquatics and Reptiles: Includes brands such as Aqueon, Blagdon, Coralife, Interpet, Kent, Oceanic, Tropical fish, and Zilla
- Wild and Pet Bird: Includes brands such as Kaytee, Cedarworks, and Pennington

After the acquisition of Farnam in 2006, Central Garden & Pet began a process of folding both of their pet and animal health companies, Wellmark International and Farnam, into one organization. Wellness is the sole domestic producer of Methoprene, an active ingredient used to control mosquitoes, fleas, ticks, and mites. Central Garden markets and produces flea, tick, mosquito, and insect control products manufactured by Wellmark International sold under the brand names BioSpot Active Care, Adams, and Pre Strike. Through its Farnam operations, Central Garden sells health care products for horses. Farnam's portfolio of brands includes Ivercare, Bronco, Super Mask II, Horseshoer's Secret, and Vetrolin.

The Adams brand, under animal wellness, includes a range of products for pets, home, and yard. The company offers sprays to protect animals from fleas and ticks. The sprays are used to kill fleas, flea eggs, flea larvae, and ticks. The sprays are non-staining and easy to apply. The products offered under the BioSpot Active Care brand are used to protect yards, homes, and animals from fleas and ticks. In homes, the sprays are used on carpets. The sprays are used in yards and homes to kill ants, bed bugs, house spiders, crickets, cockroaches, flies, and earwigs. The products offered for dogs are applied as a topical spot-on liquid. The Comfort Zone brand offers products for the protection of cats, kittens, dogs, and puppies. Comfort Zone Feliway products are used to reduce stress that causes vertical scratching and urine spraying. The products offered under this brand can also be used to reduce tension between multiple cats at home. Comfort Zone Adaptil is used to calm puppies, and prevent them from stress and other behavioral changes.

The brands offered under Central Life Sciences include Altosid, ClariFly, Diacon, Extinguish, Fourstar, Starbar, Zenivex, Zoecon, and Centynal. Wellmark markets insecticides to professional pest-control operators under Zoecon Professional Products; the Starbar label is marketed to farm and feed stores, and pest-control operators; and Altosid is a methoprene-based larvicide for mosquito control. The active ingredients such as (s)-methoprene, diflubenzuron, piperonyl butoxide, etofenprox, (s)-hydroprene, tau-fluvalinate, and pyrethrins are supplied through Central Life Sciences. The Zodiac product line consists of a full range of on-animal and premise insecticides. The key product groups contained in the line include: Zodiac Spot-On Flea & Tick Control for Dogs and Puppies, Zodiac Flea & Tick Collar for Small & Large Dogs, Zodiac Flea & Tick Spray for Dogs, Cats, Puppies, & Kittens, Zodiac Flea & Tick Dip for Dogs and Cats, Zodiac Flea & Tick Powder for Dogs, Puppies, Cats & Kittens, Zodiac Flea & Tick Shampoo for Dogs & Cats, Zodiac BreakAway Flea & Tick Collar for Cats, Zodiac Fogger, Zodiac Carpet & Upholstery Aerosol Spray, and Zodiac Yard & Garden Spray. Wellmark also does private-label manufacturing of flea topicals for Enforcer.

Farnam manufactures and markets health care products primarily for horses, household pets, and livestock sold through both retail and veterinary channels. The pet products segment of Farnam markets a wide range of consumer pet care products and other miscellaneous products, and the equine segment sells a range of consumer fly products. Farnam's pet and pet premise insecticides are marketed under the brands BioSpot, Scratchex, Adams, Adams Plus, and Flys-Off. Consumer fly products are sold under the Bite Free brand. Rodenticides are sold under the Just One Bite brand.

Garden Products

The Garden segment manufactures a broad array of proprietary branded lawn and garden products. The brands under this segment include Pennington, New England Pottery, Matthews Four Seasons, Norcal, Smart Seed, Ironite, The Rebels, Amdro, Image, Lilly Miller, Corry's, Over'n Out, Sevin, WorryFree, Cedar Works, and Kaytee.

Pennington Seed Inc. of Madison, GA, Grant Laboratories Inc. of San Leandro, CA, Ambrands of Atlanta, GA, Garden Tech of Lexington, KY, and the Lilly Miller subsidiaries manufacture and market Central Garden & Pet's consumer lawn and garden pesticides and fertilizers.

Pennington Seed Inc. was founded in 1945. The company manufactures and markets a complete line of lawn and garden products, including fertilizers, pesticides, grass seed, vegetable seed, wildflower seed, bird feed, wildlife products, soil and forestry products. The products help in balancing the pH of the soil, thereby, reducing the occurrence of moss, bare spots and weeds. The company was started by the late Brooks Pennington, Sr., and has developed into the largest producer and marketer of grass seed in the United States. Pennington Seed was 100% owned by the Pennington family until Central Garden & Pet acquired the company in February 1998, making it a wholly owned subsidiary.

The company markets and produces grass seed and soil supplements. The products offered include fertilizers for lawn, plants, and soil. The Smart Seed brand offers products that provide thick green lawns and protects the lawn from insects and diseases.

Weed, insect and pest control products are offered under various brands including Amdro, Lilly Miller, Image, and Corry's, among others. The Lilly Miller product line includes chemicals, fertilizers, and seeds that work best on lawns, vegetable gardens, flower gardens, shrubs and trees. Products for wild and pet birds are offered under Cedar Works and Kaytee brands. Cedar Works includes products such as feeders, houses, and accessories.

Pennington Seed's consumer pesticide and fertilizer sales, including the Eliminator brand produced for Walmart, are estimated at \$85.0 million in 2016.

Table 9-17: Pennington's Sales of Pesticides and Fertilizers, 2016

Product category	\$ Million	% Of total
Outdoor insecticides	47.6	56
Fertilizers	21.2	25
Nonselective and selective herbicides	10.2	12
Household insecticides	6.0	7
Total	85.0	100

Central Garden Distribution is the current name for the original Central Garden distribution company. The name was changed to Excel Garden Products when the company lost the rights to distribute Scotts line of garden products, but has now changed again. Central Garden Distribution has eleven distribution centers nationally and distributes products internally from Central Garden companies, such as Pennington, as well as other lawn and garden companies' products.

Grant Laboratories Inc. manufactures and markets ant and spider insecticides and dog, cat, and animal insect repellents for consumer use. The ant and spider insecticides are sold under the Grant's Kills Ants label. The animal repellents are sold under the RO-PEL brand. Grant also supplies rodenticides under the Sure Stop brand. Sales of Grant's consumer insecticides in 2016 are estimated at \$5.0 million, accounting for nearly 80% of the company's revenue of \$6.2 million.

Ambrands manufactures Amdro Fire Ant Bait and Image selective herbicide. Amdro is the leading fire ant bait available in the consumer market. The company also offers Amdro Ant Block, Amdro Fire Ant Bait, Amdro Kills Ants, Amdro Quick Kill Carpenter Bee, Ant & Termite Killer, Amdro Quick Kill Home Perimeter Insect Killer, Amdro Quick Kill Outdoor Insect Killer, Amdro Yard Treatment Fire Ant Bait, Amdro Ant Block Home Perimeter Ant Bait, Amdro Kills Ant Killing Bait, Amdro Mole & Gopher Bait, Amdro Gopher Gasser, Amdro Gopher Trap, Amdro Kills Ants & Spiders, and Amdro Quick Kill Lawn Insect Killer. Consumer sales of Amdro and Image are estimated at \$25 million for 2016. Ambrands is headquartered in Atlanta, GA.

The Lilly Miller line includes chemicals, fertilizers, and seeds. There are four primary brands: Lilly Miller, Cooke, Worry Free, and Alaska. The Worry Free brand is limited primarily to lawn food, molluscicides, organic animal repellents, and moss control; the Cooke brand is limited to specialty baits; the Alaska brand, purchased in 2000, is a line of sprayable, liquid, and dry fertilizers made from fish. The Lilly Miller segment has several sub-brands.

Sales of Lilly Miller's pesticides and fertilizers are estimated at \$17.5 million in 2016. It is estimated that fertilizers make up more than half of the total sales of the company with insecticides, herbicides, and other products almost equally sharing the remainder.

Table 9-18: Lilly Miller's U.S. Sales of Pesticides and Related Products to Consumer Markets by Product Category, 2016

Product category	\$ Thousand	% Of total
FERTILIZERS		
Lawn	7,260	41.5
Garden	2,190	12.5
Houseplant	175	1.0
Total	9,625	55.0
INSECTICIDES		
Lawn/garden	2,625	15.0
HERBICIDES		
Garden	1,310	7.5
Lawn	1,050	6.0
Nonselective	265	1.5
Total	2,625	15.0
ALL OTHER		
Rodenticides	700	4.0
Lime/amendments	700	4.0
Fungicides	525	3.0
All other	700	4.0
Total	2,625	15.0
TOTAL	17,500	100.0

MARKETING POLICIES

Central Garden & Pet's lawn and garden products are sold through a number of distribution channels, including retailers, such as mass merchants, home improvement centers, independent lawn and garden nurseries, drug and grocery stores, and professional end users. Sales to Walmart represent approximately 31%, sales to Lowe's represent approximately 20%, and sales to Home Depot represent approximately 19% of our Garden segment's sales in fiscal 2016.

The company's distribution network consists of 20 facilities that are strategically placed across the United States, one in the United Kingdom, and one in China to provide service to its mass market and independent specialty retail stores.

Pet Products' consumer-branded products are sold nationwide through its own distribution network. Products are sold through retailers, such as club, regional and national specialty pet stores, independent pet retailers, mass merchants, grocery and drug stores, as well as the e-commerce channel. In addition, the company serves the professional market with insect control and health and wellness products for use by veterinarians, municipalities, farmers, and equine product suppliers. Costco accounts for approximately 10% of the Pet segment's sales in fiscal 2016. PetSmart and PETCO are also significant customers.

ADVERTISING

Traceable media expenses for Central Garden & Pet amount to \$5.5 million in 2016.

On the Garden side, about \$3.3 million in TME is for Pennington products. Of this, \$2.5 million is for Pennington 1 Step Complete, split between spot TV and magazines. Pennington also advertises on the internet, with its website providing information about weed and insect charts and lawn care programs at penningtonseed.com. Lilly Miller promotes its lawn and garden lines at lillymiller.com.

On the Pet side, traceable media expenses for Central Garden & Pet amount to \$2.0 million in 2016. The majority of this is spent on magazine advertisements for Adams Flea & Tick products. Minor amounts are spent on the Four Paws, Farnam, and Nylabone brands. Zodiac promotes its pet products and informational materials on its website zodiacpet.com.

FACILITIES

Central Garden & Pet manufactures the majority of its branded products in 33 manufacturing facilities located in the United States. Some of the company's products are also manufactured by the contract manufacturers. Garden Products currently operates 23 manufacturing facilities, including Pennington's GRO-TEC fertilizer plants in Eatonton, GA, and Longmont, CO, and Grant's manufacturing facility in San Leandro, CA. The company also owns 29 sales and sales logistics facilities in the United States, one in China, and one in the United Kingdom. Each of its sales and logistics center provides warehouse, distribution, sales and support functions for its geographic area. The company has an exclusive agreement with a third party to manufacture (S)-Methoprene for flea and tick control products. Central Garden & Pet has approximately 3,600 employees, plus temporary seasonal help.

OUTLOOK

The company's net sales witness an upsurge in 2016 from the previous year. Net sales for the company are \$1.83 billion in 2016, as compared to \$1.65 billion in 2015. The company is following its strategy to improve profitability by increasing sales and providing innovative products to the customers while reducing costs. The company is focusing on strengthening its relationship with the new and existing retailers. Moreover, the company intends to gain market share in the home centers, mass market, grocery, specialty pet store, and independent channels. Sales of consumer pesticides and fertilizers by Central Garden & Pet are estimated to reach \$244.8 million by 2021.

Table 9-19: Central Garden & Pet's Outlook for Pesticides and Fertilizers, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	225.0	-
2021	244.8	1.7

CONTROL SOLUTIONS INC.

OVERVIEW

Control Solutions Inc. (CSI) of Pasadena, TX, is a partner of Makhteshim-Agan Industries (now ADAMA). The company started in 1958 with the acquisition by the Boyd family of a small Pasadena, TX, pest control company, which came to be named Ford's Chemical and Services in 1976. Control Solutions was created in 1985 primarily to distribute Ford's products to the professional and consumer markets. Ford was acquired by Roussel in 1989, and Control Solutions continued as a family-owned business. The company partnered with Makhteshim-Agan Industries, which re-branded its global business as ADAMA Consumer & Professional Solutions.

The company formulates and markets insecticides, herbicides, fungicides, rodenticides to distributors and retailers. The company offers the following product categories: Professional Pest Management, Consumer Products, Golf and Sports Turf, Technical AI Products, Production Animal products, and Lawn and Landscape products. All products are under three brands—CSI, Quali-Pro, and Martin's.

SALES AND PROFITS

In 2016, the company's sales of consumer pesticides, herbicides, and related products are estimated at \$14.8 million.

CONSUMER PESTICIDES AND FERTILIZERS

CSI manufactures and markets a variety of herbicides, insecticides, fungicides, rodenticides, animal health, and lawn and garden products, as well as fertilizers and technical concentrations for consumer and professional markets. Most of the active ingredients are supplied by ADAMA.

The company offers insecticides, herbicides and fertilizers under its three brands: CSI, Quali-Pro, and Martin's. CSI's commercial turf and ornamental products are marketed under the brand name Quali-Pro and the consumer animal health/lawn and garden products are marketed under the brand name Martin.

CSI's Professional Pest Control products include general insecticides; termiticides; and vector control products. These products offer long-term control of roaches, flies, mosquitoes and other insects. The brands offered under this category include Bifen, Cyonara, Cyzmic, D-Fense, Dominion, Fuse, Meteor, Optimate, Permethrin, Pestabs, Pivot, Pramitol, Pyrofos, Stryker, Surrender, SynerPro, Taurus, Tekko, and Vector-Ban Plus.

Consumer products include broad spectrum insecticides that are used to kill insects that destroy lawns, shrubs, vegetables, and fruits. The Prefurred Plus brand offers products that kill fleas and ticks on dogs. The Pystol brand products are used in automatic misting systems in residential yards. These products kill house flies, horse flies, black flies, mosquitoes, and other insects. The brands included under this category are Clear Pasture, Cyonara, Dominion, Flee Plus IGR, Permethrin, Prefurred, Pystol, Surrender, and TopShot, among others.

The Golf and Sports Turf category includes herbicides, insecticides, fungicides, and turf enhancement products. The products are marketed under the brand name Quali-Pro. The products under this category are economical and offer broad-spectrum disease control for seasonal grasses, flowers, shrubs, and for greenhouses and nurseries. The products are primarily generic formulations of abamectin, chlorothalonil, dithiopyr, and others.

The company's Lawn and Landscape category includes herbicides, insecticides, fungicides, and turf enhancement products. Some of CSI's brands in the Lawn and Landscape segment include Taurus, Nimitz, Enclave, Strobe, Foursome, T-Nex, among others.

Production Animal products include disease, weed and pest control for livestock and farm areas, primarily under the brand Martin's.

The Technical AI products category offers a range of products that can be used for material protection in architectural coatings, stains, grouts & sealants and for protection of wood, wood composites and plastics.

In early 2010, CSI launched Optimate SC, an insecticide containing gamma cyhalothrin for use against adult and immature beetles, darkling beetles, and hide and carrion beetles. The company also launched two products under the Pyrofos brand: Pyrofos 1.5 ULV containing chlorpyrifos to control adult mosquitoes in outdoor areas; and Pyrofos CS which is a micro encapsulated premise insecticide to be used in and around livestock, housing and commercial buildings. In 2011, the company launched the first post-patent fipronil products under the Taurus brand, including Taurus G, a granular insecticide containing 0.0143% fipronil, and Taurus SC, a liquid formulation containing 0.8 lb of fipronil per gal.

In 2014, the company registered Fuse, a liquid insecticide in Florida. Fuse is an addition to CSI's pest management product portfolio.

In 2014, Control Solutions introduced Tekko Pro, a combination chemistry that contains active ingredients, primarily, pyriproxyfen and novaluron. The product fits well within the integrated pest management approach.

It is estimated that nearly 75% of the company's sales are to professional and non-retail channels. Total U.S. sales of CSI's consumer pesticides, herbicides, and related products are estimated at \$14.8 million in 2016.

Table 9-20: CSI's U.S. Sales of Pesticides and Related Products to Consumer Markets by Product Category, 2016

Product category	\$ Thousand	% Of total
INSECTICIDES		
Non-plant outdoor	4,100	27.7
Pet	3,065	20.7
Household insecticides	2,380	16.0
Garden	1,570	10.6
Total	11,115	75.0
HERBICIDES		
Non-selective	3,700	25.0
TOTAL	14,815	100.0

MARKETING POLICIES

CSI's consumer products are marketed nationally, but sales are concentrated in the Sunbelt and Western states. The company's vice president of sales oversees all sales and marketing activities, with the support of one inside salesperson. All sales move through distribution channels, with the exception of retail outlets in Texas and private-label sales to other suppliers. The company's retail sales are focused on independent dealers. CSI recently hired a business manager for the growing biocides business. In 2014, the company appointed a mid-south regional sales manager for its Quali-Pro team.

ADVERTISING

The company participates in trade shows, but otherwise does minimal advertising. It offers promotional schemes, such as "Buy five cases of 2DQ (Quali-Pro) and get one case free". The promotional activities are in line with the company's strategy to increase its sales.

FACILITIES

CSI maintains a manufacturing and distribution center at its headquarters in Pasadena, TX, and operates four Houston-area retail stores in Pasadena, Bissonnet, Sagemont, and West Houston. Regional distribution centers are located in St. Joseph's, MO, Helena, AR, Goldsboro, NC, and Pasco, WA.

OUTLOOK

CSI is an important supplier of pesticides, herbicides, fungicides, and rodenticides to professional and consumer outlets. The company has been aggressive in acquiring new product lines and in formulating products for professional applicators. In July 2011, MAI (now ADAMA) announced that it would combine the activities of Quali-Pro, its Raleigh, NC-based brand focused on turf and ornamental products, with CSI. The integration of Quali-Pro with CSI is intended toward attaining a more comprehensive portfolio of effective products in the environmental solutions market.

Approximately half of the company's retail sales are believed to be through its four retail stores in the greater Houston area, and sales at these stores are forecast to grow at moderate rates over the forecast period.

Consumer sales are projected to grow at an annual rate of 2.7% over the forecast period, reaching about \$16.9 million in 2021.

Table 9-21: Forecast U.S. Sales of Pesticides and Related Products to Consumer Markets by Product Category, 2016 to 2021

Product category	\$ Thousand	
	2016	2021
INSECTICIDES		
Non-plant outdoor	4,100	4,685
Pet	3,065	3,500
Household insecticides	2,380	2,720
Garden	1,570	1,795
Total	11,115	12,700
HERBICIDES		
Non-selective	3,700	4,225
TOTAL	14,815	16,925

THE DIAL CORPORATION

OVERVIEW

The Dial Corporation is a leading manufacturer of consumer products in the United States. Its products date back to 1868 with the introduction of Armour Star canned meats by Philip Danforth Armour. Over the following 20 years, Armour introduced a variety of cleaning products, including laundry detergent and soap, for which Dial Corporation has become well known. Dial now offers a range of personal care, laundry, home care, and food products.

Dial became a subsidiary of Henkel AG & Co. KGaA in March 2004. The deal was valued at \$2.8 billion. Later in the year, Henkel exchanged its 28.8% investment in The Clorox Company for a newly formed subsidiary of Clorox that included several consumer products including Combat ant and roach killer. These brands were merged into Henkel's Dial business unit. Dial continued to streamline its operations and in March 2006, divested its foods business for \$183 million to New Jersey-based Pinnacle Foods. The insecticide products are retained within the Combat line of products in Henkel.

TOTAL SALES

Henkel reports total global sales of €18.7 billion (\$16.9 billion) in 2016. Of this, sales attributable to laundry and home care products are reported at €5.7 billion (\$5.2 billion) or roughly 31% of Henkel's total sales. Sales in North America are estimated around \$4.1 billion in 2016.

Combat is sold primarily through Dial's internal sales organization. Sales direct to retailer stores account for 90% of the total Combat sales. No Combat products are specifically designated for professionals, and Dial does not private label any insecticides.

PRODUCTS

The Dial Corporation has two lines of roach and ant control products in its Combat product line: Combat Source Kill and Combat Source Kill Max. Combat Source Kill products are based on hydramethylnon as the active ingredient, killing ants and roaches through inhibition of the formation of adenosine triphosphate. Source Kill products act slowly, allowing pests to return to their colony/nest before dying to poison other pests in the colony/nest. Combat Source Kill Max has fipronil as its active ingredient, killing ants and roaches by contact or ingestion. Source Kill Max products have a fast-acting formula which gives immediate results, killing pests in hours.

The Combat range of products are available nationwide through a variety of retailers including hardware stores such as Ace, Sears, and True Value; home centers such as Home Depot and Lowes; food stores such as Pathmark, ShopRite, and Foodarama; drug stores such as Walgreens, Rite Aid, and Duane Reade; and mass merchandisers such as Walmart, Target, Family Dollar, and Dollar General.

ADVERTISING

Overall, Dial provides strong advertising support for its brands; however, there is no reported TME in 2016 to support the Combat brand.

FACILITIES

Henkel is based in Scottsdale, AZ, and currently has around 51,350 employees in 126 countries. Nearly 16% of Henkel's employees are based in the United States. Henkel operates 188 production facilities in 57 countries. Products for the Combat line are produced in a facility in Korea.

OUTLOOK

Dial's laundry and home care product segment witnesses rising sales in fiscal year 2016. The operating profit also witnesses double-digit growth. Sales in this segment are mainly driven by gains in international sales and detergents. Dial continues to provide support to the mature Combat line. Therefore, sales growth for Combat is expected to remain low, at just 1% to 2%, over the forecast period.

Table 9-22: Dial's Outlook for Pesticides, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	8.5	-
2021	9.2	1.5

ELANCO

OVERVIEW

Elanco, a division of Eli Lilly and Company, was formed in 1960 when its Agricultural and Industrial Sales Division was reorganized. In the 1990s, Elanco Products Company was renamed to Elanco Animal Health with a focus on production of animal health products. Elanco has concentrated its efforts on acquiring other companies to widen its expertise and product portfolio. In 2013, Elanco acquired AgriStats, to expand its vaccine offerings. In 2014, Elanco acquired Novartis Animal Health and Lohmann Animal Health business to increase its animal, livestock, and aquaculture offerings.

Elanco offers animal health products in more than 70 countries, globally, and has offices in more than 40 countries. The acquisition of Novartis Animal Health business has augmented Elanco's manufacturing and R&D capabilities, with 17 manufacturing sites and 14 R&D sites. As a condition of the transaction following the acquisition of Novartis, Elanco divested animal health assets in the United States related to the Sentinel flea and tick brand to Virbac Corporation for approximately \$410 million.

SALES AND PROFITS

In 2016, Elanco's animal health sales total \$3.2 billion. It is estimated that sales in the United States are \$1.6 billion, with an equal amount sold outside the country.

CONSUMER PRODUCTS

Elanco's animal health products include Rumensin, Posilac, Maxiban, Tylan, Denagard, and Optaflexx. The company offers consumer pesticides under the brand names Trifexis, Comfortis, Cheristin, Parastar, EasySpot, and Capstar.

Trifexis provides protection against parasites for dogs. It is used to kill fleas and prevent infestations. Moreover, Trifexis treats and controls hookworm, roundworm, and whipworm infections in dogs. Trifexis is composed of two active ingredients in the form of a flavored tablet that protect dogs from hazardous parasites and start killing fleas within 30 minutes.

Comfortis is a fast-acting and effective treatment for flea infestations on dogs and cats. It kills fleas even before they lay eggs and keeps killing fleas for a month with each dose. It is approved for use on cats and dogs that are 14 weeks of age or older.

Cheristin is for cats and used to kill fleas and prevent infestations. It can be applied on cats and kittens that are 8 weeks of age or older. It is considered harmful for humans and cats if ingested.

Parastar is an effective flea and tick control product that is used to protect dogs. It is waterproof and easy to apply. It also has a limitation, in that it can only be applied on dogs and puppies that are 8 weeks of age or older.

EasySpot is a flea and tick control product that is applied to the cat's back in a single spot. It is effective over a prolonged period and acts fast on fleas, ticks, and chewing lice.

Capstar is an oral flea-control product for dogs and cats that starts killing fleas within 30 minutes. It has no labeled side effects and is compatible with other common veterinarian dispensed medications. It can be used on puppies and kittens if they weigh at least 2 lb. It is the only orally administered product for both dogs and cats.

Sales of the flea and tick products above are estimated at \$22 million for 2016.

MARKETING POLICIES

Elanco promotes its products primarily to veterinarians for companion animal products. Elanco also advertises certain companion animal products directly to pet owners in markets where it is consistent with allowable promotional practices.

ADVERTISING

Elanco has no TME to support its consumer flea and tick products in 2016. The company states that it advertises some of its companion animal products directly to pet owners in markets where it is consistent with acceptable promotional activities.

FACILITIES

Elanco is headquartered in Greenfield, IN, and has operations spread across Asia, Europe, and South America. The acquisition of Novartis Animal Health business has augmented the company's manufacturing and R&D facilities with nearly 17 manufacturing sites and 14 R&D locations.

Elanco states that its animal health scientists leverage discoveries from its human health laboratories to develop products to enhance the health and wellbeing of pets.

Elanco employs around 7,000 people, with offices in more than 40 countries.

OUTLOOK

With stiff competition in flea and tick products, relatively narrow distribution through veterinarians and loss of its Sentinel product, Elanco's U.S. sales are expected to continue to post low single-digit growth through the forecast period. The company believes in attaining long-term competitive success by strategically acquiring animal health businesses and improving productivity of its operations.

Table 9-23: Elanco's Outlook for Pesticides, 2016 to 2021

Year	\$Million	Average annual growth, %
2016	22.0	-
2021	24.3	2.0

THE ESPOMA COMPANY

OVERVIEW

The Espoma Company, located at Millville, NJ, is a privately held manufacturer and marketer of organic and specialty plant foods. The company was founded in 1929 by H.G. Sanders. H.G. Sanders' great-grandson is the fourth generation of the family to manage the company.

The company started production in 1929 with its first product, Espoma Organic, which was a proprietary blend of natural ingredients. In the late 1940s, the plant food product specifically for acid-loving plants such as hollies, azaleas, and rhododendrons called Holly-tone was introduced, which became the company's best-selling product. Espoma established itself as a manufacturer of premium plant foods with the introduction of Espoma Organic, which is known today as Plant-Tone. The product line came to symbolize its philosophy of blending the finest quality organic ingredients to create the highest quality lawn and garden fertilizers.

Plant food has been the company's sole product focus in the past few years. As one of the leading manufacturers of natural organic fertilizers, it has become one of the largest consumers of natural by-products for plant food.

In 2009, The Espoma Company was named "Manufacturer of the Year" at the Lawn & Garden Marketing & Distribution Association's (LGMDA) Summit held in Ponte Vedra, FL. The company, today, manufactures over 48 products for various plant nutritional needs. The Espoma Company's products are sold by all the major distributors and retailers in the United States.

SALES AND PROFITS

Espoma is a privately held company and does not release financial information. The corporate revenues of the company are estimated to be approximately \$19.9 million in 2016.

The company is committed to its long-term, profitable growth, continually reinvesting the profits to ensure long-term success. Espoma tries to ensure that its products are profitable not only for the company but for the entire supply chain. It also focuses on the competitive pricing of its products to ensure adoption by mainstream gardeners.

CONSUMER FERTILIZERS

The company produces and markets branded fertilizers composed of mixtures of dried organic nutrients for consumer and professional use. It claims to sell only the finest organic ingredients available, using no fillers, sludge (bio-solids), inert, toxic, or hazardous materials.

Since its products are manufactured at its company-owned facility, Espoma is able to closely control the quality of every bag it produces. In addition, the company uses independent laboratories to perform tests on all raw materials to ensure that no dust or unwanted particles are present, that the correct nutrients are present, and that the materials are the correct shape and size.

The company organizes its products into the following product lines: Indoor Plant Foods, Liquid Plant Foods, Organic Plant Foods, Premium Organic Lawn Foods, Organic Potting Soils, Organic Supplements, Conventional Plant Foods, and Earth-tone Pesticides.

The company, in the Indoor Plant Foods category, has a complete line of 8 oz. liquid concentrates that consist of natural proteins and essential microbes. The products in this category include, INDOOR! 2-2-2, CACTUS! 1-2-2, VIOLET! 1-3-1, ORCHID! 1-3-1, SHINE! and INSECT!.

In February 2016, Espoma introduced a new line of liquid plant foods. The company's Organic Liquid Plant Foods are proven to grow bigger and better plants. These concentrates are comprised of natural proteins that are enhanced with humic acid, kelp extracts, and a set of beneficiary microbes that yield comprehensive results. The products in this category include, Bloom! 1-3-1, Start! 1-2-2, Grow! 2-2-2, and Fish! 2-3-0. Bloom! 1-3-1 stimulates plentiful fruit and promotes flowering. Grow! 2-2-2 is an all-purpose plant food that promotes root growth. Start! 1-2-2 is a starter plant food that helps in establishing plants faster while growing strong roots. Fish! 2-3-0 is a fish fertilizer that boosts growth.

Espoma's Organic Plant Food line consists of 12 products to nurture flowers, shrubs, and vegetables. It is composed of blends of natural fertilizer materials optimized for specific applications, as identified by product name. They are available in a ready-to-use (RTU) granular formulas as opposed to liquid or powder. These products include Holly-tone 4-3-4, Bio-tone Starter Plus 4-3-3, Plant-tone 5-3-3, Garden-tone 3-4-4, Rose-tone 4-3-2, Tomato-tone 3-4-6, Bulb-tone 3-5-3, Flower-tone 3-4-5, Tree-tone 6-3-2, Palm-tone 4-1-5, Citrus-tone 5-2-6, and Iron-tone 2-0-3. The Tones are available in a variety of sizes ranging from 4 lb to 40 lb bags to meet the needs of a variety of gardeners. These products provide plants with all 15 essential nutrients, as a shortage of even one nutrient can prevent plant growth or reduce growth to low levels. They are also intended to enrich the soil, creating a reservoir of nutrients for steady, continuous feeding.

The lawn products in the Premium Organic Lawn Food line are Spring Lawn Booster 8-0-0, All Season Lawn Food 9-0-0, Summer Revitalizer 8-0-0, Fall Winterizer 8-0-5, Weed Preventer 9-0-0, Lawn Starter 3-6-3, Espoma Lawn Food 15-0-5, and Lightning Lime. This product category provides complete lawn solutions with long lasting organic feeds, weed prevention, soil and grass nourishment, making the lawn resistant to heat, drought, and other stress. The above-mentioned lawn products are known to be safe for use around children and pets.

The company offers a line of Organic Potting Soils and soil amendments that are used for organic gardening. The products include Organic Potting Mix, Organic Moisture Mix, Organic All-Purpose Garden Soil, Organic Vegetable & Flower Garden Soil, Organic Seed Starter, Organic Cactus Mix, Organic African Violet Mix, Organic Orchid Mix, Earthworm Castings, Organic Peat Moss, Organic Perlite and Organic Vermiculite. These mixes are rich blends of natural ingredients.

The organic supplements are comprised of 100.0% natural and organic ingredients and are pure plant food that do not contain sludge. These products are approved for organic gardening. The products include Chicken Manure 3-2-3, Alfalfa Meal, Soil Acidifier, Garden Lime, Garden Gypsum, Bat Guano 10-3-1, Blood Meal 12-0-0, Bone Meal 4-12-0, Kelp Meal 1-0-2, Cottonseed Meal 6-2-1, Compost Starter, Greensand 0-0-0.1, Soil Perfector, and Rock Phosphate 0-3-0. Soil Perfector is an all-natural soil conditioner. It is made from a naturally derived, kiln-fired ceramic mineral, a process which creates durable, lightweight granules containing thousands of tiny storage spaces that hold the perfect balance of water, air, and nutrients for an improved soil structure.

The conventional plant foods product line is designed for the gardeners that require immediate response in their flowers or vegetable plants. The products are of high-quality, and are fast-acting sources of phosphorus, nitrogen, and potassium. The fast-acting nutrients help in stimulating growth. The line consists of five products including, Urea 45-0-0, Triple Phosphate 0-45-0, Potash 0-0-60, Garden Food 5-10-5, and Garden Food 10-10-10.

The Earth-tone pesticides are effective against slugs, snails, and insects. The products offered under this product line include Earth-tone 3n1 Disease Control, Earth-tone Insect Control, Earth-tone Insecticidal Soap, Earth-tone Garden Fungicide, and Earth-tone Slug and Snail Control.

Espoma's U.S. sales of consumer fertilizers and pesticides are estimated at \$19.9 million in 2016.

Table 9-24: Espoma's U.S. Sales of Pesticides and Related Products to Consumer Markets by Product Category, 2016

Product category	\$ Thousand	% Of total
Lawn fertilizers	7,960	40
Garden fertilizers	5,970	30
Pesticides and others	5,970	30
Total	19,900	100

MARKETING POLICIES

Espoma's products are widely distributed to lawn and garden centers in 26 states and are exported to Europe, the Middle East, and South Africa. Espoma's presence is the strongest in the Northeast states where the company started out, and has good distribution in the eastern half of the United States, from Texas to Illinois eastward.

Espoma's brands are carried by most major distributors and retailers in the eastern United States. The company's marketing strength is with independent retailers, although its product line has gained entry into some mass-merchandise retail outlets. The company does not produce private-label products for others. Its numerous dealers are listed on its website, which allows the customer to access the 10 closest retailers in the area by entering in a zip code.

ADVERTISING

Espoma's TME for 2016 is \$2,700, spent on in-store displays.

Espoma's service orientation is evident on its website. Its consumer-friendly features include an online FAQs section, which provides money-saving tips and answers to practical everyday questions. There are also many easy instructional videos available for consumers to watch.

FACILITIES

Espoma has its headquarters and manufacturing facility in Millville, NJ. The company employs around 143 people. Its state-of-the-art complex has evolved over decades with a dozen individual expansions beyond the main structure. The complex includes an office building, five finished goods and raw material warehouses, as well as several buildings for the processing and packaging of its products.

The company has continued to streamline its blending and packaging processes. The company installed new automated equipment in the 1990s for the blending and packaging of small bags of plant food. In the early 2000s, new packaging equipment was added, facilitating the conversion to plastic bags for the Tones line.

OUTLOOK

Espoma's overall product sales have remained stable in the past two years and the company expects to achieve slight growth in the next five years, as the consumer interest in natural and organic gardening practices is expected to increase. The trend of growing interest in environmentally sound lawn and garden practices and growing foods with natural ingredients is stronger in the East, where Espoma has its operations.

Espoma has been actively involved for more than 40 years as an industry liaison in the American Association of Plant Food Control Officials (AAPFCO), which regulates the U.S. fertilizer industry.

Espoma is expected to realize 2.0% average annual growth of its product line over the forecast period. U.S. consumer sales are forecast to grow from an estimated \$19.9 million in 2016 to around \$21.9 million in 2021.

Table 9-25: Espoma's Outlook for Pesticides and Fertilizers, 2016 to 2021

Product category	\$ Thousand		Average annual growth, %
	2016	2021	
Lawn fertilizers	7,960	8,788	2.0
Garden fertilizers	5,970	6,591	2.0
Pesticides and others	5,970	6,591	2.0
Total	19,900	21,971	2.0

GOOD EARTH HORTICULTURE

OVERVIEW

Good Earth Horticulture Inc., located in Lancaster, NY, is a manufacturer and distributor of lawn and garden horticulture products. The company was founded as GHB Nurseries in 1958 when it started retail business and grew into a distributor and producer of horticulture products over the time as GHB Enterprises. The company was incorporated as Good Earth Horticulture Inc. in 1999, specializing in organic garden chemicals.

Good Earth Horticulture has a sister company by the name of Good Earth Canada Limited, which operates a pet moss bog and packaging facility in New Brunswick, Canada. All of its products are exported to the United States and other overseas markets, such as Japan.

SALES AND PROFITS

Good Earth Horticulture is a privately held company and does not disclose financial information. Estimated sales of the company for 2016 are around \$13.3 million.

CONSUMER FERTILIZERS

Good Earth Horticulture offers a wide range of products under its Hoffman brand. This brand was created in 1934, as a division of Hoffman Seeds to provide small gardening product packages to home gardening consumers. Since its inception, a variety of new horticulture products and packaging designs have been added to the Hoffman brand. The brand comprises of premium quality and lightweight products for home gardeners. Hoffman was first to offer lightweight, soilless potting mix for home gardeners.

The fertilizers offered under the Hoffman brand include African Violet Soil Mix, Alabaster Blend Stone Chips, All Purpose Potting Mix plus, Aluminum Sulfate, Azalea & Evergreen Food, Azalea and Rhododendron Food, Bedding Plant and Perennial Planting Mix, Bone Meal, Bonsai Soil Mix, Bulb Food, Cactus & Succulent Mix, Canadian Sphagnum Peat Moss, Citrus Food, Cocoa Shell Mulch, Cow Manure, Dog & Cat Repellent, Dried Blood, Flower & Garden Food, Flower & Vegetable Planting Mix, Garden Fertilizer, and Water Gardening Soil, among others.

Good Earth Horticulture also has a variety of soil conditioners, soil amendments, decorative soil covers, organic and natural food for plants and gardens, potting soils, specialty planting mixes, outdoor planting mixes, mulch products, and ice and snow melters. The company also produces specialty products for the golf course industry and other markets.

MARKETING POLICIES

Good Earth Horticulture sells its products to independent stores, such as garden centers, nurseries, and chain stores, such as Home Depot, and to soil mixer companies including the Scotts Company.

The company focuses on marketing program which will assist gardeners with a multi-step gardening program guaranteed to produce the most beautiful lawn and garden results.

ADVERTISING

Good Earth had no TME for 2016. Information about its various products can be found on their website, which includes a Garden Wheel section that informs a consumer about products that can be used for different plants.

FACILITIES

Good Earth Horticulture's facilities are located in the town of Lancaster, NY. The company's facilities include an office building and a 60,000 square feet warehouse.

OUTLOOK

Good Earth Horticulture has been involved in the composting of yard waste for various towns and Buffalo, NY. The company focuses on providing premium quality products to the consumers which are lightweight and easy to use. The company also values improved package designs for the products to sell well in the self-service markets. Good Earth Horticulture's garden fertilizer sales are expected to reach around \$15 million in 2021, growing at an average annual rate of 2.5%.

HARTZ MOUNTAIN

OVERVIEW

The Hartz Mountain Corporation manufactures and markets more than 2,000 pet products and supplies, including nutritional items, pet foods and treats, toys, grooming aids, birdcages and small animal homes, aquarium kits, reptile accessories, insecticides, cat litter, and miscellaneous pet items. The company has also diversified into the area of commercial real estate.

After operating the company for more than 75 years under the Hartz Group umbrella along with the family's real estate operations, the Hartz pet business was purchased by J.W. Childs Associates, a leading private equity investment firm, which gave a renewed focus to research and development. In 2004, The Hartz Mountain Corporation was acquired by Sumitomo Corporation. The acquisition allowed Hartz to undertake a number of new business initiatives, like the development of new markets and distribution channels in Asia and Europe. In 2011, Sumitomo took on a partner and Hartz became a joint venture of Sumitomo and Unicharm Corporation, a leading consumer goods company based in Japan. Unicharm entered into the pet-care business in 1986 and is currently the leading pet care manufacturer in Japan.

Hartz Mountain originated in 1926 when Max Stern, a German immigrant, began selling singing canaries imported from Germany to department stores in the United States. In 1932, the company expanded, selling packaged bird food, canaries, parakeets, hamsters, and supplies across the United States and Canada. In 1959, Max Stern's son, Leonard, joined the company and helped broaden the product line into goldfish, tropical fish, and aquatic supplies. By the mid-1960s, the company had a full line of dog and cat products, and underwent a transforming expansion as the concept of a complete pet supply department emerged at thousands of supermarkets and mass merchandisers throughout North America and the United Kingdom. Over the next 15 years, modern research, manufacturing, and nationwide distribution facilities were built, and a large national sales force was assembled. By the early 1980s, Hartz Mountain's products were sold in more than 40,000 U.S. and Canadian retail outlets.

The company continued its expansion in the 1990s, adding the Wardley and L/M brands, as well as rawhide and natural treat manufacturing facilities in the United States and Brazil. Research facilities were expanded, and a new generation of pet care products was introduced under the Hartz Control Pet Care System brand, the first line of veterinary quality flea control products to be available over the counter.

In addition to its original pet product business, Hartz Mountain's commercial real estate business over the years with holdings in New York City and New Jersey that dwarf its pet products business. The real estate business is a separate company from the original pet and real estate operations under the name Hartz Mountain Industries, Inc. and is still operated by the Stern family. By 2008, its real estate portfolio comprised more than 200 buildings containing over 38 million sq ft.

The company aims at the continuing development of innovative products to meet end-use requirements. In January 2013, Hartz introduced an improved line of Home Protection Dog Pads that do not leak. The dog pads feature a FlashDry technology that turns urine into a gel so that the pad can be lifted off hard surfaces and carpets. Hartz's products are patented by one or more patents in the United States and in other countries.

SALES AND PROFITS

Sales of Hartz Mountain's more than 2,000 pet care products are approximately \$977 million in fiscal year 2016. Total U.S. sales of insecticides by Hartz Mountain in 2016 are estimated to be \$220 million.

CONSUMER PESTICIDES

Hartz Mountain is the leading domestic supplier of pet insecticides to mass market and pet store retailers. Its products are sold under the Hartz label, with a secondary brand, Ultraguard, which was launched to replace the earlier brands such as 2-In-1, Control Pet Care System, and Advanced Care Brand.

The Ultraguard line includes products for dogs and cats. The products for dogs include Ultraguard Plus Home Fogger, Ultraguard Pro Triple Active Flea and Tick Shampoo, Hartz Chew 'n Clean dental Duo Large, Oinkies bacon Flavor Wrap Bones, Oinkies Pig Skin Twists, Oinkies Bacon Flavor Wrap XL Twists, Home Protection XXL Odor Eliminating Lavender Scent Dog Pads, Delectables Stew Lickable Treat Chicken, Hearty Rolls Chew & Treat Combo and America's Prime All Natural Premium Chews for Dogs -Smokey Pig Ears, among others. Hartz has made some product modification in their Ultraguard range by using a Pro-glide applicator for the Hartz Ultraguard Flea and Tick drops that disperses the fluid evenly at skin level of the dogs. This design of this applicator is made to suit long-hair and short-hair dogs.

Products for cats include Hartz Flip Top Cat Litter Pan, Delectables Lickable Treat-Stew Chicken & Tuna, Groomer's Best Slicker Brush for Cats, Groomer's Best Hairball Control Shampoo for Cats, Groomer's Best Combo Brush for Cats, Hartz Multivitamin for Cats, Precision Nutrition Milk Replacer for Kittens Powdered Formula, Hartz Joint Health for Cats, and Hartz Hairball Remedy Plus for Cats & Kittens Paste, among others.

MARKETING POLICIES

Hartz Mountain maintains the leading market position in all five main pet product categories, including flea and tick control products, and enjoys strong consumer brand loyalty and awareness. The company's products are sold in the important primary pet care channels in North America, including national grocery chains, mass merchandise stores, independent pet specialty retailers, and pet superstores.

An estimated 65% share of insecticide sales is distributed directly by the company to major retailers like Walmart, CVS, Safeway, Kroger, and others. The remaining 35% of sales are through distributors who resell the products to the general retailers. The company does not produce any private-label products for mass merchandisers and other brands. They do, however, manufacture some products on a contract basis.

In 2011, Hartz released a Pet Trend Report that was conducted on Hartz's behalf by Richard Day Research. The research included a poll of around 1,028 pet owners, half dog owners and half cat owners, to better understand the relationship they share with their pets. Hartz also introduced a New Pet Parent pack program to educate new pet owners about pet adoption and care. Also in 2011, Hartz signed a deal with Examiner.com to develop an advertising platform that will create a word-of-mouth marketing of Hartz's Ultraguard product range.

In 2012, Browning, the leading real estate and construction firm Prologis, an operator and developer of industrial real estate, leased an industrial distribution facility to Hartz Mountain. Hartz sponsors the American Veterinary Medical Association and Paws Atlanta "Trails for Tails" 5K Walk/Run in Atlanta.

Consistent with its tradition, Hartz continues to facilitate the exchange of ideas with the veterinary community through partnerships with the University of Idaho, Ohio State University, Kansas State University, University of Florida, Tufts University School of Medicine, Ruskin Laboratories, Shedd Aquarium, and Young Veterinary Research. The company has a veterinary advisory board of respected doctors and is also a member of several important organizations in the pet care industry. These include the Animal Health Institute, American Pet Products Manufacturer Association (APPMA), Pet Industry Joint Advisory Council (PIJAC), and Delta Society.

Hartz Mountain's community outreach activities are broad and include sponsorship of the Hartz Veterinarian of the Year Award, the Westchester Feline Club's Cat of the Year Award, the Hartz Cat Writer's Awards, the Hartz Mountain Senior Dog Award, the Karl F. Meyer-James H. Steele Gold Head Cane Award, and the sponsorship of veterinary technician scholarships.

The company is also committed to helping animal shelters improve their adoption rate. They support numerous organizations with regard to this commitment, including the United Kennel Club, Animal Haven NYC, Save our Strays, and many others.

ADVERTISING

Hartz Mountain has TME of \$94,400 for 2016, primarily used for in-store display materials.

FACILITIES

Based in Secaucus, NJ, Hartz Mountain employs approximately 2,700 people and has six U.S. manufacturing plants, two of which produce insecticides. Its main R&D facility is located in Carlstadt, NJ. Small animal and fish research is conducted at the LM Animal Farm in Pleasant Plain, OH. The company's website is located at hartz.com.

OUTLOOK

The company is expanding into Asian and European markets in an attempt to establish Hartz as a global pet care company. Hartz has also introduced a new system integrating procurement of raw materials, production, and inventory, which is expected to increase efficiency.

The EPA makes recommendations with respect to dosing, labeling, inert ingredients and the registration process. Hartz has been focusing on adhering to the environmental norms and manufacturing only products that comply with the environmental standards.

In the next five years, Hartz's sales of pet products are expected to grow at an annual rate of about 3.0%, reaching \$255.0 million in 2021.

Table 9-26: Hartz's Outlook for Pesticides, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	220.0	-
2021	255.0	3.0

J.T. EATON

OVERVIEW

J.T. Eaton & Co., Inc. is a privately held company that was founded in 1932. Over the years, the company has built a strong reputation in the professional market as a leading supplier of traps and baits for rodents, roaches, and other household pests. In 1949, Stanley Baker purchased the company and has remained its president; his sons now also hold key management positions in the family-run company. J.T. Eaton holds the distinction of being the first company to develop the paraffin bait block, as well as nonpoisonous glue board traps. J.T. Eaton has extensive representation outside the United States, with distributors in Latin America, the Caribbean, Europe, the Middle East, and Asia.

SALES AND PROFITS

The total sales for the company are estimated at \$23.8 million in 2016. Sales of chemicals and mechanical devices are split between the professional and the retail consumer. Sales to pest management and sanitary supply professionals continue to remain the focus. Professional sales comprise 60% of overall revenues, with consumer sales representing the remaining 40%. Although J.T. Eaton has extensive global representation, about 90% of its sales are in the United States.

J.T. Eaton has a growing private-label business, performing contract manufacturing services for several major companies. In total, contract manufacturing accounts for less than 10% of its overall business.

In the consumer sector, rodenticides, other pesticides, and repellents represent about half the business, and glue traps and other mechanical devices for pest control represent the balance.

Total U.S. sales of consumer pesticides are estimated at \$9.5 million in 2016. Of this, mechanical devices represented the single largest share at 48%, or \$4.6 million.

Table 9-27: J.T. Eaton's U.S. Sales of Pesticides and Related Products to Consumer Markets by Product Category, 2016

Product category	\$ Thousand	% Of total
Mechanical devices	4,560	48
Rodenticides	3,325	35
Household insecticides	950	10
Repellents	665	7
Total	9,500	100

CONSUMER PESTICIDES AND FERTILIZERS

J.T. Eaton's consumer products include various chemical compounds and mechanical devices for the control of rodents, insects, and birds. The company offers a range of professional products including glue, bait, bait stations, mechanical traps, crawling insect control, fly control, bird control, industrial sprayer parts, and accessories. The glue products include a wide range of glue traps of various sizes. Bait products are packed in different sized packages. These products are used for large infestations of rodents. Moist baits are also manufactured by the company and provide high palatability where water is not available to the rodents. Mechanical traps are used to catch up to 30 live mice without using poison. Bed bugs detector traps are also provided by the company that are adhesives designed for hard and carpeted floors. Fly control products are used to catch flies, mosquitoes, moths, and pantry pests. The products are manufactured using Green Light Technology that is estimated to catch nearly 30% more flies. The bird control product line includes bird repellant gels and liquids. The company preaches that the bird repellant gels are essential as more than 60 transmittable diseases are carried and transmitted by the birds. In addition to all these products, the company offers industrial sprayer parts for the professional products market.

Apart from the professional products, J.T. Eaton also manufactures consumer pest control products. The company has a line of products under each products category. The bed bugs category of products includes bed bug detector traps, and sprays for killing bedbugs, ticks and mosquitoes. The products are available in different pack sizes for diverse consumer requirements. The mice, rats and chipmunks line of products includes the JAWZ brand, Trigger Snaps, Rat & Snake Glue Traps, Rat Size Expanded Trigger Snap Trap, Glue Boards, Mouse & Insect Glue Traps, Rat Resistant Bait Station, Rodent Rock Bait Station, and Refillable Mouse Bait Station.

In 2008, J.T. Eaton launched the first Chipmunk Bait, as well as a new line of natural drain cleaners called Eco-Army. This latter product may be also used as a septic tank condition or birdbath cleaner, providing mosquito-free water.

In 2009, new product launches included Powder Coated Insecticidal Dusters, Double Jeopardy Glue Boards & Powder Coated Repeater Multiple Catch Mousetraps.

In 2011, J.T. Eaton was granted the certificate of registration by Canadian patent office for Little Pete Multiple Catch Mouse Trap. J.T. Eaton also received approval notification from the Arizona Department of Agriculture for the use of Bait Blocks with Peanut Butter for use in the control of packrats in 2011.

J.T. Eaton has included a new removable ramp feature into two of its best-selling Multiple-Catch Mouse Traps, the Repeater and the Little Pete, which allows the user to clean and place the ramp very quickly into the trap.

The company believes in continually developing innovative products to meet the growing demand for consumer pesticides. In 2016, J.T. Eaton introduced two new second-generation rodenticide baits: Bait Block 2G, multiple-edge wax blocks, and Nectus 2G Soft Bait, made of oil-scented compounds.

MARKETING POLICIES

J.T. Eaton's products are widely available in hardware, supermarket, drug, and discount stores. All products are sold by the company's approximately 15 manufacturers' representatives across the country. The company's products are available with distributors such as Ace Hardware, Amazon, Arbico Organics, ArmChem, bedbugsupply.com, Bostwick-Braun Company, C&S Wholesale Grocers, Chadwell Supply, Discount Drug Mart, Do it Best, Emery Waterhouse, Five Star Group, Florida Hardware, Grainger, Grangettos, Handy Hardware, HD Supply, House-Hasson, Koffler Sales Company, Menards, MSC Industrial Supply, Orgill, Pacoa, R Value West, Reiss Hardware, The Pest Depot, Triple F, True Value, Veterinary Service, Inc., Webstaurant Store, Westel, and Wilmar.

J.T. Eaton has recently begun the Stanley Z. Baker Philanthropic Program, intended to serve two purposes: to create scholarships, and to team with pest management professionals to help make charitable product donations and treatment.

ADVERTISING

J.T. Eaton advertises its products through YouTube. The videos are uploaded on the site to make people aware about the benefits offered by the company's products. Apart from YouTube, it does not use any other mode of promoting its products.

The company continues to offer holiday rebates and other promotions at many of its retail points-of-sale during the year to attract customers.

FACILITIES

J.T. Eaton is headquartered in Twinsburg, OH, and employs approximately 23 people. The manufacturing and distribution facilities are also located at the Twinsburg location. The company has made capital upgrades to the production practices in Twinsburg in the last 10 years. Manufacturing and distribution facilities are also located at the Twinsburg location.

OUTLOOK

Against the backdrop of relatively stronger economic conditions and a good season, J.T. Eaton experienced higher sales in 2016. However, the company expects its new chipmunk bait stations, for example, to be a “huge seller,” and sales of its new bedbug spray will remain strong. These new products will drive growth in the rodenticide and insecticide categories, respectively, while established lines such as mechanical devices and repellents will also support further gains.

Through the forecast period, overall sales for the company of consumer chemical products formulated as rodenticides, repellents, and insecticides will expand by 5.2% per year.

Table 9-28: J.T. Eaton's Outlook for Pesticides, 2016 to 2021

Product category	\$ Thousand		Average annual growth, %
	2016	2021	
Mechanical devices	4,560	5,820	5.0
Rodenticides	3,325	4,245	5.0
Insecticides	950	1,100	3.0
Repellents	665	790	3.5
Total	9,500	11,955	5.2

THE JOBE'S COMPANY

OVERVIEW

The Jobe's Company, formerly known as Easy Gardener Products, has a long established line of fertilizers and plant spikes under the Jobe's brand. Over the years, the company has expanded its line of offerings and caters to a huge customer base, offering more than 200 products. The various brands under which the company provides products include Jobe's Organics, Jobe's, WeedBlock, Easy Gardener, Landmaster, Ross, Sun Screen, and Sun Sail. The company offers fertilizers, soils and potting mixes, soil amendments, tree and garden accessories, landscape fabrics, fencing and netting, and sun shades and accessories.

In 1969, the first Jobe houseplant spike was introduced. Since then, the company has been focused on developing new products for trees, shrubs, and vegetables. The introduction of new products not only grew the company's market share but also made it the most recognizable brand in the United States.

In the meantime, Easy Gardener started its operations in 1983 with a view to create effective gardening products. The company introduced its first product: WeedBlock landscape fabric. Gradually, the company expanded its operations and introduced several new products in the market. Easy Gardener also acquired other companies that were specialized in garden products to enhance its product portfolio. In 1996, Jobe and Easy Gardener merged and Easy Gardener acquired the Jobe's and Ross brands. In 2007, the company introduced a new line of sustainable products under the brand name Jobe's Organics.

In 2015, Centre Lane Partners acquired Easy Gardener and later in 2016, Easy Gardener was renamed to The Jobe's Company. Since then, the company has been focused on expanding its market share in natural and organic garden and lawn products.

SALES AND PROFITS

The Jobe's Company's total sales are estimated at \$137.5 million in 2016. Approximately 20% of sales, or \$27.5 million, are estimated to be from lawn and garden products and houseplant fertilizers.

CONSUMER PESTICIDES AND FERTILIZERS

The Jobe's Company has been offering eco-friendly products for garden care for almost half a century. It manufactures granulars, water-soluble, fertilizer spikes, and root feeders. The granular products include Jobe's Organics Holly Food Granular, Jobe's Organics Annuals & Perennials Granular, Jobe's Organic Fast Start Granular, Jobe's Organics Fruit & Citrus Granular, and Jobe's Organics Bulb Food Granular, among others. These products are formulated as a natural way to give colorful blooms. All of these products consist of Biozome, a blend of beneficial microorganisms that improve soil quality.

Water-soluble fertilizers include Jobe's Organics Water-Soluble Vegetable and Tomato Fertilizer, Jobe's Organics Water-Soluble Orchid Fertilizer, and Jobe's Organics Water-Soluble Bursting Blooms, among others. These water-soluble fertilizers are organic and environmental-friendly.

Fertilizer spikes products include Jobe's Organic Spikes for Fruit & Citrus Trees, Jobe's Organics Fertilizer Spike Vegetables, Jobe's Evergreen Tree Fertilizer Spikes, Jobe's Flowering Plant Food Spikes, and Jobe's Rose Spikes. Jobe's Organics are designed to be used on huge gardens. These products prevent run-off and are environmental-friendly.

The root feeders category consists of products that are marketed under Ross brand. These products include Ross Root Feeder, Ross Evergreen Root Feeder Refills, Ross Fruit & Nut Root Feeder Refills, and Ross Tree & Shrub Root Feeder Refills, among others. Tree experts recommend watering and fertilizing below the soil's surface, hence, Jobe's feeder is specially designed for deep feeding.

MARKETING POLICIES

The Jobe's Company sells nearly 200 products through home improvement centers, garden, hardware, and discount stores across North America. Moreover, the company has a separate section for retailers on its website that consists of products catalogue and the company is further developing its website to include marketing communications programs. The company is making efforts to make its products easily accessible to its customers by including store details on its website.

ADVERTISING

The Jobe's Company had TME of \$89,500 for 2016. This expenditure is for syndicated television advertising for Jobe's Organics.

FACILITIES

The Jobe's Company is headquartered in Waco, TX, and has additional manufacturing facilities in Kentucky.

OUTLOOK

Over recent years, customers' buying patterns have changed, and currently the demand is for more sustainable and natural fertilizers. The Jobe's Company is in a prime position to capitalize on this trend with its array of natural and organically-based products. Over the next several years, ongoing new product introductions will support growth for the Jobe's Company. Through 2021, total sales are projected to expand by 2.8% per year, reaching \$31.6 million.

Table 9-29: Jobe's Company Outlook for Fertilizers, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	27.5	-
2021	31.6	2.8

LAMPLIGHT FARMS

OVERVIEW

Lamplight Farms is a privately held company, founded in 1964 by Donald and Rosemary Tendick. At its beginnings, the company pioneered the development of a liquid fuel specially formulated to burn in oil lamps without producing the smoke and odor associated with kerosene. Mr. Tendick developed a formulation of two oils that not only burned without producing smoke, but also had the delightful scents of peppermint and bayberry. Recognizing the appeal of such fuel, the Tendicks decided to market the new discovery to antique stores. With initial success, the company soon broadened its product line to include outdoor lighting products. The company grew into a major retail supplier of lamps, lamp oils, and candles for indoor and outdoor use.

In 1998, the Tendicks sold Lamplight Industries to the W.C. Bradley Company of Columbus, GA. The W.C. Bradley Company is also the parent company for Char-Broil Grills, Thermos Grills, New Braunfels Smoker Company, and Zebco fishing gear. The company's Char-Broil Division is one of the world's leading producers of outdoor barbecue gas and electric grills. Each of W.C. Bradley's companies operates as a separate business. In 2001, Lamplight Farms acquired a major competitor in the outdoor lighting business, Tiki brands. Under Bradley, Lamplight Farms has become a leading producer of indoor lamps and oil, scented indoor candles, and decorative outdoor natural flame products. These products are marketed under the Lamplight and Tiki brands. Lamplight also sells home fragrance products under the AromaGlow Brand, their brand other than Tiki and Lamplight.

The Lamplight Farms and Char-Broil Divisions have come under increased cost pressure from foreign competitors. The parent company, W.C. Bradley, decided to move production to China in 2004 and 2005. This had a significant impact on Lamplight Farms employees, with a reduction of approximately 70 manufacturing jobs.

A key development following the move was the recall of several models of Tiki brand outdoor lamps. The first recall was in July 2005, for 350,000 TIKI Cone Medal Torches. This particular recall allowed purchasers a full refund of \$9.00, for a total impact on the company of \$3.2 million. The following month another recall was announced for nearly 1 million Tiki brand bamboo torches. This recall required the company to provide a special metal plate to prevent the torch housing from catching fire. It is estimated that this recall cost the company an additional \$1 million. In September 2011, Lamplight farms voluntarily recalled about 200,000 units of its Tiki brand gel fuel bottles and jugs, due to the potential fire and burn hazard. The company has initiated many product recalls in the United States and abroad in the past few years.

SALES AND PROFITS

W.C. Bradley is a privately held company and does not release financial information. Sales of the Lamplight Farms subsidiary are estimated at about \$102 million in 2016.

CONSUMER PESTICIDES AND FERTILIZERS

Lamplight Farms markets citronella-based candles, torches, torch fuel, and lamp oils for outdoor pest control. The company offers innovative products, such as TIKI Brand BiteFighter Torch Fuel, a product that provides mosquito repellency, and TIKI Brand Clean Burn Outdoor Tabletop Firepieces and Torch Fuel, a product that reduces smoke. These are the company's only pest control offerings. Its citronella line is estimated to account for 40% of Lamplight Farm's sales in 2016, or around \$40.8 million.

Citronella oil is a volatile oil obtained from the leaves and stem of the plant *Cymbopogon winteratus* or *Cymbopogon nardus*. The oil contains approximately 30% citronella and 40% geraniol. It is a volatile essential oil, and its fumes are a potent insect repellent.

MARKETING POLICIES

Lamplight Farms' products are sold through major U.S. retailers including Walmart, The Home Depot, Lowe's, K-Mart, Target, Menard's, Walgreens, Ace Hardware, True Value, and a variety of other North American major retailers. The company also sells online, through catalogs, and in its own retail store. The company's sales effort includes a nationwide network of 16 manufacturers' representative organizations and a small internal sales staff to handle catalog and online sales. Two national account managers oversee sales to the large superstore outlets, and two field sales managers' work with the network of manufacturers' representatives.

A marketing manager located at the company headquarters in Menomonee Falls, WI, handles all marketing activities. The national account managers and field sales managers are also located in Menomonee Falls. The company sells its citronella products under the TIKI trade name, but also produces private-label products for others. Lamplight Farms employs about 69 people, about half the people it had in previous years, due to the downsizing and production moves to China.

ADVERTISING

Lamplight Farms has no TME for 2016. A company spokesman states that its advertising budget is focused on in-store displays and some print advertising.

FACILITIES

Lamplight Farms maintains a manufacturing and distribution center in Menomonee Falls, WI, but the bulk of the manufacturing is now performed in southern China.

OUTLOOK

In the past, citronella sales have closely tracked growth in U.S. retail sales. The business is seasonal and use varies widely across the United States and tends to peak in regions where new housing construction starts are active.

Looking forward future growth for Lamplight Farms' citronella-based products will be tempered by certain trends. On the positive side, the Chinese-based production should be able to keep the products in an effective price position.

Lamplight Farms' sales of citronella-based insect repellents are projected to grow 1.5% per year, reaching \$43.9 million in 2021.

Table 9-30: Lamplight Farm's Outlook for Insect Repellents, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	40.8	-
2021	43.9	1.5

LEBANON SEABOARD CORPORATION

OVERVIEW

Lebanon Seaboard Corporation of Lebanon, PA, is a supplier of lawn and garden products, wild bird food, and professional turf pesticides and fertilizers. The company was founded in 1947 and grew by acquisition of two spin-offs from the Williams Companies in 1973 and Eli Lilly in 1974. Later, Lebanon acquired several agricultural assets: Kerr-McGee in 1978; Tidewater Agricorp (Chesapeake, VA), a manufacturer of agricultural fertilizers and pesticides, in 1986; certain assets from Royster Agri Products and Draft Plant Food in 1987; and the fertilizer plants and associated equipment of the William B. Tilghman Company in 1989. In 1998, the company sold its Lebanon Agricorp Division to Royster-Clark Inc. to focus on its consumer and professional markets.

In 1993, Lebanon acquired Seaboard Seed Company and Stanford Seed Company, suppliers of retail and professional grass seed and wild and pet birdseed. Penn Turf Products was purchased in 1998, along with the Professional Lawn Care Division of Pursell Industries. Pursell's Parex brand was added to Lebanon's stable of golf course products. Lebanon also obtained the rights to enhanced methylene urea technology in 1998. In 1998, the company decided to divest from the Farm Division and focus entirely on the professional turf and consumer lawn and garden markets.

Lebanon Seaboard is a single-source producer of lawn and garden supplies, wild bird seed, and professional turf and horticultural products. It now operates eight production facilities and employs more than 300 people.

In 2008, the company acquired Emerald Isle line of foliar and granular fertilizer products from Milliken Chemical, a division of Milliken & Co.

In 2009, Lebanon Seaboard acquired the turf and landscape business from Novozymes. The business includes the Roots Turf brand of organic-based granular fertilizers, along with other unique nutritional complements.

In January 2011, Lebanon Seaboard acquired the horticulture and turf division of Plant Health Care, Inc. This acquisition was done in order to increase the product range of Lebanon Seaboard in the golf course and landscape professional market.

SALES AND PROFITS

Lebanon Seaboard is a privately held company and does not release financial information. Company sales are estimated at \$325 million in 2016.

Lebanon Seaboard markets pesticides and fertilizers through Professional Lawn & Landscape, Golf & Sports Turf, Home Lawn Care, Flower Gardening, and Vegetable Gardening categories. The Professional category accounts for 60% of the business, and the remaining 40% is for the Home Lawn & Garden category. The Home Lawn & Garden category accounts for an estimated \$130 million in 2016.

CONSUMER PESTICIDES AND FERTILIZERS

The Home Lawn & Garden division sells branded and private-label lawn and garden pesticides, fertilizers, grass seed, and mulch for the do-it-yourself market, as well as wild bird food. Private-label products are manufactured for retail chains, including Ace Hardware and online stores.

Lebanon Seaboard is good at creating cutting-edge technology and innovative packaging for the consumer. In early 2005, the company launched a new online service (greenviewonline.com) that provides homeowners with a professional approach to lawn care. The company updates the site frequently with expert advice and technology developed in its Professional Turf Products division. The website also contains a weblog for up-to-date information on when and what to apply, comparisons with other fertilizer products, and a program to have seed, fertilizer, and herbicides delivered to your home at the right time for application. The company also has a similar interactive website, preen.com, for its other brand.

Fertilizer and pesticide lines are marketed under the Greenview and Preen labels. The Preen line is a basic line of weed control products for consumer lawns and gardens. The company offers a range of products under its Preen brand which include Preen Garden Weed Preventer, Preen Garden Weed Preventer Plus Plant Food, Preen Landscape Weed Control Fabric, Preen Lawn Crabgrass Control, Preen Lawn StepSaver Weed Control Plus Fertilizer, Preen Lawn Weed Control Plus Crabgrass Preventer, Preen Mulch Plus, Preen Southern Weed Preventer, Preen Southern Weed Preventer Plus Fire Ant, Flea and Tick Killer, Preen Southern Weed Preventer Plus Plant Food, Preen Vegetable Garden Weed Preventer, Preen Weed Preventer Plus Ant, Flea, and Tick Control, and Preen Lawn Weed Control Ready2Go Spreader.

The Preen Garden Weed Preventer is used to prevent germination of weed in flowers and vegetable gardens. It prevents new weeds from sprouting but cannot kill the existing weeds. The Preen Garden Weed Preventer Plus Plant Food prevents weeds up to three months and feeds plants for foliage and strong roots to help evade the insects. It can be applied during the spring summer around ground covers, shrubs, and trees. The Preen Landscape Weed Control Fabric is a minimal maintenance and non-chemical weed control product that lasts for a longer period. It is suitable to be used on shrub beds and rock beds. Preen Lawn Crabgrass Control prevents crabgrass and other broadleaf weeds for nearly four months, when applied prior to their germination in lawns and turfgrasses. It also controls the growth of toughest weeds including chickweed, crabgrass, henbit, yellow foxtail, and spurge. Preen Lawn StepSaver Weed Control Plus Fertilizer is used to kill broadleaf weeds and prevent crabgrass in one-time step. It is used to kill nearly 200 lawn weeds including dandelion, chickweed, thistle, and clover. This fertilizer provides all the nutrients that the lawn needs for around 2-3 months. Preen Lawn Weed Control Plus Crabgrass Preventer provides protection against weed for nearly 5 months. It is formulated to be effective with cool as well as warm seasons grasses. It is used to kill ground ivy, thistle, dandelions, and prevents crabgrass. Preen Mulch Plus is a finest garden mulch that provides 6 months control of broadleaf weeds and helps landscaped areas retain moisture, thus, preventing the plants and trees from extreme temperatures. Preen Southern Weed Preventer is useful against southern weeds and in warm climatic conditions. It prevents weeds from germinating for up to 4 months in flower beds. Preen Southern Weed Preventer Plus Fire Ant, Flea and Tick Killer not only prevents tough weeds from germinating but also kills insects including foraging fire ants, fleas, and ticks. It is highly recommended to be used in flower and landscape beds, rock gardens and around trees, shrubs, and groundcovers. Preen Southern Weed Preventer Plus Plant Food is particularly formulated for the hot growing season of the southern climate. It prevents weeds for nearly 4 months and feeds plants for foliage and strong root growth. Preen Vegetable Garden Weed Preventer is an organic weed control product that controls weed in fruits, vegetables, herbs, and landscape beds during the growing season. It prevents weeds such as clover, bluegrass, crabgrass, foxtail, and plantain. Preen Weed Preventer Plus Ant, Flea, and Tick Control is primarily used in the foundation beds to prevent new weeds from rooting. It kills foraging ants and fleas before they latch onto the pets. Preen Lawn Weed Control Ready2Go Spreader, a battery operated handheld spreader is perfect for smaller lawns and hard to reach areas such as slopes, hillsides, and tight spaces. It is refillable with Preen Lawn Weed Control. The Preen line of products is mostly distributed by large mass merchandisers.

The Greenview line offers a more professional line of fertilizer products for the homeowner adapted from the Professional Turf Products Division. The products offered under Greenview line include Greenview Fairway Formula Spring Fertilizer Weed & Feed and Crabgrass Preventer that provides nitrogen for the spring and summer season. The slow release of nitrogen provides the lawn with controlled and steady nourishment over a period. It prevents crabgrass and kills dandelions, clover, viney weeds and other broadleaf weeds. Greenview Crabgrass Control plus Lawn Food with GreenSmart feeds, and thickens the lawn. It is also used to control crabgrass and other grassy weeds. Greenview Fairway Formula Tall Fescue Sun & Shade Grass Seed Blend is useful for patching small spots for planting new lawns. The company also offers Natural Start by Greenview Tomato, Vegetable, & Herb Food, which is rich in organic nutrients. It is used to boost root development for nutrient absorption. The other products offered by the company include GreenView Fairway Formula Fall Fertilizer, GreenView Starter Fertilizer with GreenSmart, GreenView Seed Starter Fertilizer Plus Crabgrass Preventer, GreenView Crabgrass Control plus Lawn Food with GreenSmart, Turf Nurture Natural Base Fertilizer for Lawn Restoration, Lebanon ProScape 9-2-5 Fertilizer with Iron, GreenView Grass Seed Accelerator, GreenView Fairway Formula Perennial Ryegrass Grass Seed Blend, Lebanon ProScape Fertilizer with Merit 0.3% Insecticide, GreenView Fairway Formula Kentucky Bluegrass Blend Grass Seed, Lebanon Eagle 0.62G Specialty Fungicide, and Lebanon Broadleaf Weed Killer with Trimec Herbicide.

The GreenView Fairway Formula Fall Fertilizer is used to repair summer damage and it boosts root growth for winter hardiness. GreenView Starter Fertilizer with GreenSmart helps in improving nutrient absorption and protects the lawn against heat and drought. GreenView Seed Starter Fertilizer Plus Crabgrass Preventer is used in controlling crabgrass in newly seeded lawns. GreenView Crabgrass Control plus Lawn Food with GreenSmart is a long-lasting fertilizer that controls all types of grassy weeds and crabgrass. It does not contain phosphate, thus, promotes clean waterways. Turf Nurture Natural Base Fertilizer for Lawn Restoration delivers 15-0-7 strength lawn restoration that decreases lawn stress caused by drought, cold and heat. Lebanon ProScape 9-2-5 Fertilizer with Iron improves the quality of soil and feeds the lawn evenly. GreenView Grass Seed Accelerator's moisture cell technology is useful in maintaining moisture in the soil due to which seeds germinate in less time. It consists of a starter fertilizer that develops strong roots. GreenView Fairway Formula Perennial Ryegrass Grass Seed Blend consists of Wildhorse Kentucky Bluegrass, Appalachian Kentucky Bluegrass, and Shannon Kentucky Bluegrass that lead to moderate to slow seed germination. Lebanon ProScape Fertilizer with Merit 0.3% Insecticide provides necessary nutrients to the soil while controlling the intervention of insects such as grubs, Japanese beetles, Sugarcane beetles, and cinch bugs, among others. GreenView Fairway Formula Kentucky Bluegrass Blend Grass Seed leads to moderate to slow seed germination. Lebanon Eagle 0.62G Specialty Fungicide can be used on the entire lawn or on specific spots as required. It is used to control dollar spot, brown spot, and summer patches. Lebanon Broadleaf Weed Killer with Trimec Herbicide kills dandelions and other broadleaf weeds. It does not contain fertilizer and can be applied anytime during the growing season. The Greenview line is marketed more through specialty garden centers.

Total sales of consumer pesticides and fertilizers for Lebanon Seaboard are estimated at \$119 million in 2016, with branded products representing 75%, and third-party or private-label products accounting for the remaining 25%.

Table 9-31: Lebanon Seaboard's Sales of Pesticides and Fertilizers for Branded and Private Label, 2016

Product category	\$ Thousand	% Of total
Branded products	89,250	75
Private label	29,750	25
Total	119,000	100

U.S. consumer sales for branded products are estimated at nearly \$90.2 million in 2016, with herbicides roughly a split of 50/50 between fertilizers and herbicides.

Table 9-32: Lebanon Seaboard's Estimated U.S. Sales of Pesticides and Related Products To Consumer Markets by Product Category, 2016

Product category	\$ Thousand	% Of total
FERTILIZERS		
Garden	27,060	30
Lawn	18,942	21
Total	46,002	51
HERBICIDES	44,198	49
TOTAL	90,200	100

MARKETING POLICIES

Lebanon Seaboard sells about 70% of its products through distributors and about 30% directly on a national basis, Kmart, Walmart, Lowe's, Home Depot, and Agway, with sales strongest in the midwest, northeast, and mid-Atlantic states.

ADVERTISING

In 2016, TME for Lebanon Seaboard total \$1.2 million, primarily focused on the Preen Weed Preventer product, with a small amount to support the Greenview brand. The majority of the advertising for Preen Weed Preventer is on cable TV, with about 10% for advertisements on spot TV.

Table 9-33: Lebanon Seaboard's Advertising Expenditures, 2016

Product	\$ Thousand
Preen Weed Preventer	1,206.4
Greenview	34.9
Total	1,241.3

FACILITIES

Lebanon Seaboard has its headquarters in Lebanon, PA. Products are produced in eight production facilities in Arcade and Binghamton, NY, Bristol, IL, Danville, IL, and Denver and Lebanon, PA. The company has distribution centers in Lebanon, PA, and Danville, IL. Lebanon Seaboard employs more than 300 people.

OUTLOOK

Lebanon Seaboard is focused on its consumer and professional turf markets. The company continues to leverage its professional expertise into the consumer market and it is expected that this will help to grow the consumer business. Overall, future sales of U.S. consumer pesticides and fertilizers are expected to grow at 3.0% per year to reach \$104.6 million by 2021.

Table 9-34: Lebanon Seaboard's Outlook for Pesticides and Fertilizers, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	90.2	-
2021	104.6	3.0

MERCK ANIMAL HEALTH

OVERVIEW

Based in Madison, NJ, Merck Animal Health is among the leading pharmaceutical companies globally. It was established in 1940s, when the foundation of Intervet was established. Since then, Intervet continued developing fowl pox vaccine for poultry. In 1961, Intervet was acquired by Netherlands based Koninklijke Zwanenburg Organon (which was later known as AkzoNobel). The company gradually progressed and developed first recombinant DNA vaccine that was effective against diarrhea in piglets.

In 1990s, Intervet introduced SCALIBOR, an antiparasitic dog collar to prevent Leishmaniasis from sand fly bites. The company continued to expand its operations and in 1997, Merck and Rhone-Merieux (later Sanofi) entered into a joint venture to combine their animal health divisions and named it Merial. Later in 2009, Merck & Co. acquired Schering-Plough; and Intervet/Schering-Plough Animal Health became the animal health division of Merck. In 2011, the operating name of Merck's animal health unit changed to Merck Animal Health in the United States and MSD Animal Health outside the United States and Canada.

In 2015, Merck Animal Health acquired Harrisvaccines, a company that manufactures vaccines for food production and companion animals. By combining Harrisvaccines's R&D and product portfolio, Merck aims at addressing the most severe diseases impacting animals.

In 2015, Merck Animal Health and China Animal Husbandry Industry entered into a partnership, wherein both companies will share scientific and commercial expertise and explore animal health vaccine opportunities in China.

In July 2016, Merck receives the U.S. Food and Drug Administration's approval of Bravecto, a treatment for fleas and ticks in cats and dogs. A single dose of Bravecto is effective for up to 12 weeks. Bravecto products are available only through licensed veterinarians.

In 2017, Merck Animal Health acquires Vallee S.A., a leading producer of animal health products in Brazil. The combined strength of both the companies is expected to provide the customers with wide-ranging portfolio of products for livestock animals.

SALES AND PROFITS

Merck & Co. reports corporate sales of nearly \$39.8 billion in 2016. Net income from operations is \$3.9 billion. The animal health division registers sales of \$3.5 billion 2016. The sales of animal health division witnessed a rise from 2015. The animal health segment develops, manufactures, and markets animal health products including vaccines. R&D expenses are around \$10.1 billion in 2016 as compared to \$6.7 in 2015. The increase in R&D expenditures is because of increased clinical development spending, higher restructuring, and licensing costs.

Table 9-35: Merck Animal Health Sales by Segment, 2016

Segment	\$ Billion	% Of total
Pharmaceutical	35.1	88.2
Animal Health	3.5	8.8
All other-a	1.2	3.0
Total	39.8	100.0

a- Includes third-party manufacturing sales.

CONSUMER PESTICIDES AND FERTILIZERS

Merck Animal Health offers a range of animal health products for companion animals. The animal health segment manufactures and sells animal health products including vaccines to veterinarians, distributors, and animal producers. The major products offered under the Animal Health segment are livestock products, poultry products, companion animal products, and aquaculture products.

Merck participates in the consumer pesticide market via their flea and tick products for companion animals. Their primary product line for fleas and ticks on both dogs and cats is the Bravecto line, all formulations of which are based on the active ingredient fluralaner, a new ectoparasiticide belonging to the isoxazoline group. The first formulation released was a chewable tablet used for the treatment of tick and flea infestations in dogs. In July, 2016, the company announced that the FDA has approved a new topical formulation that can be used on both dogs and cats and will effectively control fleas and ticks for about 12 weeks following a single dose.

The Activyl flea and tick product line, based on indoxacarb, was launched in 2012. It includes Activyl, which stops fleas from feeding, kills adult fleas and flea larvae, and inhibits flea development in the environment. It also includes Activyl Tick Plus, which combines indoxacarb for flea control with permethrin for tick protection. It kills four major tick species: *Dermacentor variabilis*, *Rhipicephalus sanguineus*, *Ixodes scapularis*, and *Amblyomma americanum*. The last formulation is Activyl Spot-On for Cats and Kittens, a monthly flea topical.

The last product in the flea and tick category is under the Scalibor brand name. Scalibor is a collar that offers long term protection for dogs from mosquito bites, ticks, and sand flies. It provides 6-month protection against ticks that carry Lyme disease, Rocky Mountain spotted fever, Babesiosis, Anaplasmosis and Ehrlichiosis.

Merck Animal Health's sales of consumer flea and tick products are estimated to be \$28 million for 2016.

MARKETING POLICIES

Patent protection is of substantial importance to the company's marketing of health products in the United States. Patent covering products provide market exclusivity, which is significant for successful marketing and sales of products.

Moreover, Merck's success is largely dependent on significant marketing of its new products. Merck Animal Health is a research-driven company and they claim to offer one of the industry's most innovative portfolios. The company sells its animal health products to veterinarians, distributors, and animal producers. It works to "earn the trust of our customers every day."

ADVERTISING

Merck Animal Health had traceable media expenditures of approximately \$8.0 million for 2016. The majority of these expenditures were for Bravecto, with \$4.8 million spent on cable television advertising, and \$2.9 million on syndicated television advertising.

FACILITIES

Merck's Animal Health global headquarters are in Madison, NJ. The research facilities are in Switzerland and China. Principal U.S. research facilities are located in Rahway and Kenilworth, NJ, West Point, PA, Palo Alto, CA, Boston, MA, and Elkhorn, NE (Animal Health).

OUTLOOK

Over the next several years, ongoing new product introductions will support moderate growth for Merck Animal Health. Through 2021, total sales are projected to expand by 3.2% per year, reaching \$32.8 million.

Table 9-36: Merck Animal Health Outlook for Pesticides, 2016 to 2021

Year	\$ Thousand	Average annual growth, %
2016	28.0	-
2021	32.8	3.2

MERIAL

OVERVIEW

Headquartered in London, England, Merial Ltd. was started by Merck & Company and Sanofi-Aventis in 1997 as a standalone venture owned equally by each party. In July 2009, Sanofi-Aventis agreed to buy Merck & Co.'s half of the Merial animal-health venture for \$4 billion. Merck sold its animal-health assets after the regulators said its purchase of Schering-Plough would make it too dominant in the market.

Sanofi had an option to combine Merial with the Intervet/Schering-Plough animal health business to form a new animal health venture, owned equally between the "new" Merck and Sanofi-Aventis. However, Sanofi recognized the value of having Merial on a separate line.

In 2011, Merial transitioned from being a subsidiary of Sanofi-Aventis into becoming the company's animal health division. Their global headquarters returned to Lyon, France.

Merial has become the world's leading animal health company, with more than \$2.7 billion in sales in 2016 of veterinary pharmaceuticals and vaccines used to prevent and treat diseases in livestock, poultry, and companion animals.

In December 2015, Sanofi and Boehringer Ingelheim started exclusive negotiations leading to a strategic transaction in June 2016. This transaction consists of an exchange of Sanofi's animal health business (Merial) and Boehringer Ingelheim's consumer healthcare (CHC) business.

Combining Merial and Boehringer Ingelheim's portfolios and technology platforms in anti-parasitics, vaccines, and pharmaceutical specialties will put the combined company into a more competitive position in key segments of the industry. The Boehringer Ingelheim Animal Health business is forecast to more than double its sales to approx. €3.8 billion (USD 4.2 billion) based upon 2015 global sales.

The swap is expected to achieve total completion in 2017. Hereafter, in future reports, Merial will be profiled as part of Boehringer Ingelheim.

SALES AND PROFIT

Sanofi-Aventis

In April 2004, after a bitter takeover battle, Aventis SA was purchased by its smaller rival, Sanofi-Synthelabo SA for about \$65 billion, and the merged company became known as Sanofi-Aventis. Sanofi-Aventis now owns 100% equity interest in Merial.

Sanofi-Aventis reports net sales for 2016 of about \$30.5 billion.

Table 9-37: Sanofi-Aventis' Corporate Sales, 2016

Business segment	\$ Million-a	% Of total
Pharmaceutical	26,432	86.5
Vaccines	4,577	15.0
Total	30,569	100.0
a- Exchange rate: €1.00 = \$0.90386.		

With all 2016 totals adjusted to reflect a comparable basis, the company reports operating income of \$5.9 billion for 2016.

Merial

Merial's worldwide sales are approximately \$2.7 billion in 2016. Sales of fipronil-based products (Frontline and Frontline Plus) are \$1,016 million. The decline in sales in Fipronil products is a result of a lower household consumption in the companion animal healthcare market and an increasingly competitive environment in the United States. The net sales of Frontline and related products in the United States are \$550 million.

CONSUMER PESTICIDES AND FERTILIZERS

Merial's sales of consumer pesticides under its own label in 2016 are attributable to Frontline, a veterinarian-dispensed topical flea and tick control insecticide for dogs and cats based on the active ingredient fipronil, and Frontline Plus, a combination of fipronil and (S)-methoprene, a second-generation flea and tick treatment. The line has become, according to Merial, the "Vet's #1 choice for long-lasting flea and tick protection." Frontline has recently been named as the highest selling veterinary product in the world by Vetnosis.

Frontline was launched in 1996 by Rhone-Merieux prior to the formation of Merial. It is available in two formulations: original Frontline, and Frontline Top Spot, launched in 1997. Frontline Top Spot is a spot-on product applied to the back and shoulders of dogs and cats, while Frontline spray is a liquid on-animal spray available in a 250 ml bottle. Both products are available only through veterinarians, controlling fleas and ticks on dogs and cats for one month.

Frontline Plus, introduced into the North American market in 2001, contains both fipronil and methoprene and offers protection against all flea life stages for cats and dogs. It is available only as a spot-on formulation from veterinarians. In June 2005, Merial announced the production of the one billionth pipette of Frontline, which at that time, had been used on nearly 200 million pets in more than 100 countries.

Frontline Plus and Frontline Top Spot are available in both 3-dose and 6-dose packages for cats and kittens, dogs up to 22 lb; dogs 23 to 44 lb, dogs 45 to 88 lb, and dogs 89 to 132 lb.

Heartgard Plus is among the most recommended preventer of heartworm disease in dogs. The bite from an infected mosquito makes the heartworm larvae migrate through the dog's tissue and later enters the bloodstream and end up in the pulmonary artery. If the heartworm is allowed to stay for long in the artery, it leads to heart, lung, and kidney damage. It prevents heartworm disease in dogs, kills heartworm larvae, and controls roundworms and hookworms.

Nexgard for dogs is used to kill adult fleas before they lay eggs. It also kills black-legged ticks, American dog ticks, and brown dog ticks. It is approved by FDA and is safe to be used on dogs and puppies that are 8 weeks of age or older. It contains an ingredient named afoxolaner, which kills both fleas and ticks.

MARKETING POLICIES

Merial uses its own sales force to sell its pet insecticides, including Frontline, along with its wide range of other veterinary pharmaceuticals, directly to veterinary clinics and to a nationwide network of distributors. Merial also has a website (www.frontline.com) that offers product and technical information and interactive tools. It is also offering special coupons on its website, which allows the consumer to get one additional frontline product on purchasing six doses of Frontline Plus or Top Spot.

ADVERTISING

In 2016, Merial had advertising to support the above brands totaling \$103.1 million. This was split between Frontline Plus, with \$20.7 million, Frontline Gold, with \$19.4 million, HeartGard Plus, with \$13.1 million, NexGard, with \$49.8 million, and the remainder on miscellaneous flea and tick issues. The vast majority is spent on various types of TV advertising: spot TV, cable TV, syndicated TV, and network TV. A small portion is spent on magazine ads.

FACILITIES

Merial has recently announced establishing of its global business headquarters at Gerland, Lyon in France. Merial's North American headquarters is in Duluth, GA, with a professional staff of 400. The company operates several facilities throughout the world, employing more than 6,900 people in more than 150 countries. Merial has 15 manufacturing sites. There are 13 research and development centers worldwide, and technical and regulatory requirements are met by a staff of more than 1,700. In May 2007, Merial divested its St. Louis pharmaceutical blending facility to Huvepharma; the factory mainly produced anticoccidials for use in poultry.

OUTLOOK

Merial's Frontline has demonstrated significant growth over the past several years, capturing market share from other products to become the premier flea and tick spot-on medication in the United States.

The compound patent for fipronil, the active ingredient of Frontline, expired in 2009 in Japan and in some European countries, including France, Germany, Italy, and the United Kingdom, and in 2010, in the United States. However, Frontline products are still protected through formulation patents which expire in 2017 in Europe and August 2016 in the United States. Substitutes for fipronil-based flea and tick products continue to gain ground, and Frontline faces strong competition from lower cost alternative topicals.

With the economic outlook continuing to improve over the next few years, it is expected that there will be an increase in the number of households owning pets and higher per capita spending on pet care products. This trend is expected to result in an annual increase of 2.0% per year for Frontline.

Table 9-38: Merial's Outlook for Pesticides, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	550.0	-
2021	607.2	2.0

MONTEREY LAWN AND GARDEN PRODUCTS

OVERVIEW

Based in Fresno, CA, Monterey Lawn and Garden Products, Inc. is an employee-owned distributor of plant protection chemicals and fertilizers. Its products are designed to fill niche markets with economical but effective solutions for yard and garden problems.

Monterey offers approximately five dozen different items to retail nurseries and garden centers. Most of these products are professional-grade agricultural and horticultural materials and are registered and labeled for sale to the home gardener. This line includes both traditional pesticide products as well as organic products in the insecticide, herbicide, fungicide, molluscicide, growth regulator, and fertilizer categories.

In December 2009, Monterey AgResources was acquired by Brandt Consolidated, Inc. The acquisition of Monterey AgResources was a part of Brandt's aggressive corporate strategy providing better product portfolio, production and warehousing for customers throughout North America and around the world.

SALES AND PROFITS

Monterey AgResources, acquired by Brandt, is a privately held company and releases limited financial information. Corporate sales in 2016 are estimated at \$59 million. Almost all the company's sales are through brokers and distributors and a minuscule amount of the company's sales are directly to retail and online. Sales are mainly through garden centers and hardware stores in the western states including Armstrong Garden Centers, Green Thumb, Sloat Garden Centers, Ace Hardware, Orchard Supply Hardware, and True Value. All of Monterey's products are sold under its own brand names.

Monterey AgResources has a packaging division and the company produces and packages private-label products for other companies as well. Private-label products account for about 15% of the total sales for its products. About 85% of the total sales are of the company are branded products.

Table 9-39: Monterey AgResources' Sales for Branded and Private-label Products, 2016

Product category	\$ Million	% Of total
Branded products	50.2	85
Private label	8.8	15
Total	59.0	100

Monterey Lawn and Garden is a consumer products subsidiary of Monterey AgResources. Of all the company's sales, the Lawn and Garden subsidiary accounts for around \$12 million, or 20% of the overall business and the Turf and Ornamental subsidiary accounts for 10% of the company's overall business. The agricultural products division accounts of about 70% of the company's overall sales in 2016.

Table 9-40: Monterrey Lawn and Garden's Sales by Business Division, 2016

Business division	\$ Million	% Of total
Agricultural Products	41.3	70
Lawn and Garden	11.8	20
Turf and Ornamental	5.9	10
Total	59.0	100

CONSUMER PESTICIDES AND FERTILIZERS

Monterey Lawn and Garden markets a broad range of organic and chemical products for lawn and garden use, including lawn and garden adjuvants, fertilizers, fungicides, herbicides, growth regulators, insecticides, molluscicides, rodent traps, and soil enhancers.

Table 9-41: Monterey Lawn and Garden's Brands and Products of Consumer Pesticides, 2016

Product type	Brands/Products
Herbicides	Crab-E-Rad Plus
	Crab-E-Rad Plus RTU
	Grass Getter
	Herbicide Helper
	Kudzu Killer
	Mark-It Blue
	Monterey Brush & Vine Control
	Nutgrass Killer II Selective Herbicide
	Remuda Full Strength
	Spurge Power
	Star Thistle Killer
	Thistledown
	Turflon Ester
	Weed Impede
	Weed Whacker
Rodenticides	Mole Repellent
	Go-Die Gopher Bait II
Bugs, Slugs & Snails	All Natural Mite and Insect Control RTU
	All Natural Snail & Slug Spray RTU
	Aphid & Whitefly Spray
	Bug Buster II
	Citrus Leafminer Trap & Lure
	Codling Moth Trap & Lure
	DIY Multi Insect Killer
	Indoor Fly Trap & Lure
	Mole Cricket-Chinch Bug Lawn Spray RTS
	Monterey Ant Control
	Monterey B.t.
	Monterey Garden Insect Spray
	Monterey Horticultural Oil
	Monterey Once A Year Insect Control
	Monterey Rose & Flower Insect Spray
	Monterey Rose & Flower Spray Plus
	Monterey Termite & Carpenter Ant Control
	Olive Fruit Fly Trap & Lure
	Pantry Moth Trap & Lure
	Sluggo
	Sluggo Plus
	Spider Trap
	Stink Bug Spray
	Vegetable Garden Soil Insecticide
	Take Down Garden Spray
	Yellow Stick Sprays
(Continued)	

Table 9-41: Monterey Lawn and Garden's Brands and Products of Consumer Pesticides, 2016

Product type	Brands/Products
Fungicides	Agri-Fos Systematic Fungicide
	All Natural 3 in 1 Garden Insect Spray
	Bi-Carb Old Fashioned Fungicide
	Fruit Tree Spray Plus
	Liqui-Cop
	Monterey-Nature's Own Spray Helper
	Monterey Complete Disease Control Brand
	Monterey Complete Disease Control Brand RTU
	Monterey Consan 20
	Monterey Fungi-Max Brand
	Monterey Garden Insect Spray RTU
	Monterey Garden Phos
	Monterey Garden Phos with Pentra-Bark
	Monterey Lawn Fungicide
	Monterey Liquid Copper Fungicide RTU
	Monterey Neem Oil RTU

One of its most popular products is Sluggo, a snail-and-slug eliminator that is available in five sizes. These include bottles of 1 lb, 2.5 lb, 5 lb and 10 lb that can treat areas of land to 2,500 sq ft. For landscapes up to 10,000 sq ft, 10 lb bags are available. Sluggo Plus is now OMRI (Organic Materials Review Institute) listed for use in organic gardening. Another key product is Weed Impede, a weed killer for flowerbeds.

In 2016, herbicides account for the largest portion of the company's sales, each with \$3.3 million, or 25% of the total. Insecticides follow with \$2.6 million and 20% of the total consumer pesticide sales. Fungicides and other specialty products comprised 55% with \$7.1 million.

Table 9-42: Monterey Lawn and Garden's Sales of Consumer Pesticides, 2016

Product type	\$ Million	% Of total
Herbicides	3.0	25
Insecticides/insect growth regulators	2.4	20
Fungicides	2.4	20
All other-a	4.1	35
Total	11.8	100
a- Include adjuvants, molluscicides, fertilizers, etc.		

MARKETING POLICIES

Monterey's lawn and garden products are marketed through more than 50 distributors across the United States. These distributors serve independent retailers and garden centers as well as industry professionals such as landscapers, marketing locally to lawn and garden shops. Direct purchase is also available through the company's website, montereylawnandgarden.com, for those not able to purchase locally, but who live in states in which Monterey is registered. While products are available throughout the United States, most retail sites selling Monterey Lawn and Garden products are located in California, Oregon, Washington, and other Northwest states.

ADVERTISING

Monterey has no TME for 2016, but has previously stated that it spends about 10.0% of its sales on promotion, placing advertisements in trade and consumer magazines. It also runs ads on radio shows with lawn and garden themes in Oregon, California, and Washington. Monterey uses direct mail, on a limited basis, to promote to new customers. Mailers often include special time-sensitive coupons and discounts.

FACILITIES

Most of Monterey Lawn and Garden's products are manufactured in Fresno, CA. In-house staff handles regulatory and labeling requirements in select markets nationwide. Front office, sales support as well as warehousing staff are also located in Fresno, CA. The sales team comprises seven different territory managers around the United States who manage the distributors in the assigned regions. Distributors, in turn, have representatives who sell the company's products to the small retailers and big stores. There is a customer service division that provides the product information and manages online sales as well.

OUTLOOK

Over the next several years, ongoing new product introductions will support moderate growth for Monterey Lawn and Garden. Although the company remains focused in the Western states with fairly saturated distribution in California, innovative new launches will drive sales gains. Through 2021, total sales are expected to expand by 2.5% per year, reaching \$13.4 million.

Table 9-43: Monterey Lawn and Garden's Outlook for Pesticides, 2016 to 2021

Year	\$ Million	Average annual growth, %
2011	11.8	-
2016	13.4	2.5

PBI/GORDON

OVERVIEW

Founded in 1947 as Private Brands Incorporated and expanded in 1956 with the purchase of Gordon Chemical, PBI/Gordon Corporation of Kansas City, MO, is a nationally known supplier of herbicides and plant-growth regulators for consumer lawns and gardens, farm and ranch, professional turf management and maintenance, and herbicides for agricultural use. The company is divided into Gordon's professional products, Gordon's consumer products, Commercial Sales, Pet Ag, PRN, and Pegasus Labs. The Commercial Sales group supplies active ingredients and formulated private-label products to other lawn and garden formulators nationwide. In 1999, PBI/Gordon purchased Pegasus Labs, which supplies animal health products including vitamins, wound dressings, and other related products. Pegasus has continued to run separately from PBI/Gordon. In 2010, PBI/Gordon acquired the pet products brand of Church and Dwight Co., branded as Lambert Kay, that included pet shampoos, nutritional products, medicines, cleaning tools, and pet training toys. In 2013, the company acquired Pet-Ag, a manufacturer of companion animal nutritional and healthcare products.

SALES AND PROFITS

PBI/Gordon is an employee stock ownership plan (ESOP) company and releases limited financial information. Corporate sales in 2016 are estimated at \$120 million. The company continues to grow, primarily fueled by growth in consumer sales and the pet health divisions. Less than 5% of sales are outside the United States.

CONSUMER PESTICIDES AND FERTILIZERS

Consumer products are marketed by the Consumer Products Sales group under the Gordon brand and via the Commercial Sales group through third party companies under their own brands. Previously, the company also sold its products under the Acme brand, which has been phased out.

PBI-Gordon manufactures and sells a range of consumer pesticides through its divisions. Gordon's professional products are primarily for turf and golf course managers. This group provides herbicides under the brand names Avenue, Barrier, Katana, PowerZone, Q4 Plus, Ornamec, Speed Zone, Super Trimec, Surge, Trimec, and TZone SE. These brands offer products that are used to control the growth of buttonweed, dollarweed, and spurge. The insecticides are offered under the brand names Azatrol, Zylam 20SG, and Zylam liquid. Azatrol is a botanical insecticide that regulates insect growth and repels hungry insects. Zylam 20SG is used to control leaf-feeding turfgrass insect pests. Zylam liquid provides control of a broad spectrum of chewing and sucking insects such as mealybugs, leaf hoppers, aphids, and bagworms, among others.

Gordon's consumer products are classified as Lawn & Garden, Farm & Homestead, Animal Insect Control, Pond Treatment, and Food Plot Solutions. Most of the products covered in this study come under the Lawn & Garden category of Gordon's consumer products. The Lawn & Garden category includes products for insect control, plant protection, brush & stump control, and weed control. The brands offered for insect control are Bug-No-More, Grub-No-More, Garden Guard, and Malathion Spray. Plant protection includes products such as Dormant Oil Spray, Liquid Fruit Tree Spray, Spreader Sticker, Leaflock Spreader Sticker, and Pruning Sealer All-Weather Tree Paint. Brush and stump control products include All-Season Brush-No-More and Stump Remover. All-Season Brush-No-More is an oil-based herbicide that controls the growth of trees vines and broadleaf weeds. Weed control products include the brands Trimec, Speed Zone, Liquid Edger, Barrier, and Pronto, among others. These products are used to kill weeds, grass, and brush.

Farm & Homestead includes brands such as Acreage Pro, Pasture Pro, Pronto, Barrier, Bug-No-More, and Tankables. The animal insect control products include Aqueous Fly Spray, Goat & Sheep Spray, and premise insecticides for barns and stables, among others. Pond Treatment consists of brands including PondMaster that controls aquatic weeds and algae.

The PetAg group services companion animals with grooming, milk replacers, nutritional, household, and treat products.

PRN Pharmacal products are sold primarily to veterinarians. This segment includes PBI/Gordon's flea and tick products, which are sold under the Mycodex, Vet-Kem, and Ovitrol brands. These lines include shampoos, premise sprays, and on-animal topicals to control pet parasites.

Lastly, Pegasus Labs offers product development services for human and animal health products.

In 2002, PBI/Gordon introduced glyphosate products under the Gordon's Pronto label, available in ready-to-use and concentrate formulations for non-selective post emergence control of broadleaf and grass weeds in a variety of home and hobby farm situations. Speed Zone Lawn Weed Killer targets very fast activity of hard-to-control weeds in home lawns. Azatrol EC Insecticide is a certified organic insecticide sold by the company for the last 10 years. The company also launched a low odor variant of Trimec in late 2010 for broad leaf weed.

The company's focus has always been on developing new products and entering into strategic agreements for the consumer pesticides and fertilizers industry. In 2015, PBI-Gordon and Ishihara Sangyo Kaisha, Japan, entered an agreement to distribute Kabuto turf fungicide in the United States.

In February 2017, the company entered into a partnership with Kumiai Chemical Industry Co. Ltd., and Ihara Chemical Industry Co. Ltd., Japan, to develop herbicides containing a new pyrimisulfan active ingredient. The product is marketed under the brand name Vexis. The active ingredient is formulated to be used in cool and warm season turf grass species on residential and commercial sites, as well as sports facilities.

Consumer sales for PBI/Gordon in 2016 are approximately \$36.0 million, around 30% of the total sales.

Table 9-44: PBI/Gordon's Estimated U.S. Sales of Pesticides and Related Products to Consumer Markets by Product Category, 2016

Product category	\$ Million	% Of total
HERBICIDES		
Lawn	16.2	45
Garden	4.7	13
Nonselective and other	1.8	5
Total	22.7	63
INSECTICIDES	7.9	22
FUNGICIDES AND ALL OTHER	5.4	15
TOTAL	36.0	100

The company produces private-label products for other companies as well. Private-label products account for about 31% of the total sales for consumer pesticides and related products. About 69% of sales for consumer pesticides and related products are of the company's branded products.

Table 9-45: PBI Gordon's Sales of Pesticides for Branded and Private-label Products, 2016

Product category	\$ Million	% Of total
Branded products	24.8	69
Private label	11.2	31
Total	36.0	100

MARKETING POLICIES

PBI/Gordon's has separate sales divisions that cover for its markets. Consumer product sales are mainly in the Central, Midwestern, and Southeastern regions of the United States. An estimated 85% of consumer products are sold through the distributors to the big and small retailers while the company sells 15% of consumer products directly online and to mass merchandisers.

PBI/Gordon's products are available at local farms and retail locations. The marketing group includes a Marketing Specialist for each product line, plus in-house advertising and creative groups, allowing quick response to opportunities in a timely and cost-effective manner.

In 2013, the company leased 212,000 square feet of office, distribution, and warehouse space in North Kansas City, KS. This facility offers easy interstate highway access.

ADVERTISING

PBI-Gordon has virtually no TME for 2016. The company uses a mix of traditional and new media and dealer/distributor promotions.

FACILITIES

PBI/Gordon employs about 375 people. The sales team for each business division is different and consists of a vice-president, regional sales managers and the sales representatives of the company, other than the distributors' representatives. PBI/Gordon operates warehousing and administration facilities in Kansas City, MO, and manufacturing operations in Crestline and Kansas City, KS. The Pegasus facility is located in Pensacola, FL.

OUTLOOK

Growth in 2016 has been consistent with the growth seen in the previous years. Sales for PBI/Gordon have grown at a consistent rate since 2011. Aggressive sales policies on the part of PBI/Gordon and the growth by the customers supplied by the firm have led to these results. The company has had a steady pattern of growth for over last 10 years and intends over the next five years to continue to grow both the traditional pesticide business and the pet products lines. The company is also investigating new technologies and acquisitions as they become available for its business divisions.

In view of these trends, PBI/Gordon is forecast to grow annually at a rate of 3.0% over the next five years.

Table 9-46: PBI Gordon's Outlook for Pesticides, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	36.0	-
2021	41.7	3.0

PERRIGO COMPANY PLC

OVERVIEW

Perrigo Company is among the leading healthcare companies based in Dublin, Ireland. It was established in 1887 by Luther Perrigo, a proprietor of general store. The company started leveraging the private label concept to enhance loyalty of the customers. In 1921, Perrigo introduced its first manufacturing facility in Michigan and moved ahead from being a packager of home remedies to a manufacturer of healthcare products.

In 2012, Perrigo acquired Sergeant's pet care products to penetrate the pet care business. As per the agreement, Perrigo acquired all the Sergeant's assets for \$285 million.

In February of 2013, Perrigo acquired Velcera, which included the PetArmour brand of flea and tick products. The PetArmour brand included the generic equivalents of Frontline Plus which had long been the leading veterinary prescribed flea and tick product on the market. In 2012, the first full year on the market for PetArmour, the brand accounted for \$60 million in sales for Velcera and about \$100 million at the retail level.

SALES AND PROFITS

In 2016, Perrigo reports total sales of \$4.6 billion, and the net income of Perrigo is estimated at \$128.0 million.

Table 9-47: Perrigo's total Sales for, 2013 to 2016

Year	\$ Million	Net income
2013	3,173.2	401.6
2014	3,539.8	441.9
2015	4,060.8	205.3
2016	4,603.9	128.0

CONSUMER PESTICIDES

Over the years, Perrigo has expanded its animal health business by acquiring major pet brands present in the market. The company is focused on developing innovative pet care products. The animal health business of the company falls under the Consumer Healthcare segment. This segment comprises their OTC, animal health, infant nutrition, contract manufacturing and vitamins, minerals and supplements, and pharmaceuticals and diagnostic products business.

Perrigo offers pet care products through brands, such as Sergeant's, Sentry, and PetArmor. The products included under Sergeant brand include Sergeant's Flea & Tick, Sergeant's Green, Sergeant's Skip-Flea & Tick, Sergeant's Evolve 61, Sergeant's Gold, Flea-Free Breeze, Sergeant's Guardian, and Sergeant's Silver.

The Sentry brand comprises of a range of flea and tick products for both dogs and cats. The product line includes Sentry Fiproguard, Sentry Fiproguard Plus, Sentry Flea & Tick, Sentry Natural Defense, Sentry PRO Toy, Sentry PRO XFT 40, Sentry Vantaguard 2 Flea Treatment, Sentry Capguard, Sentry PRO Toy & Small Breed Flea & Tick, Sentry Flea & Tick Collar, Sentry 35 Day Dip, Sentry PRO Flea and Tick Spray, Sentry Fly Repellent Cream, Sentry Fiproguard Spray, Sentry Home Flea-Free Breeze home and Carpet Spray, Sentry Home, Home and Carpet Flea and Tick Spray, Sentry Home Household Fogger, Sentry Home Yard and Premise Spray Concentrate, Sentry HomeGuard Household Fogger, Sentry Tick Remover, Sentry Flea Comb, Sentry PurrScriptions Squeeze-On, PurrScriptions Plus, PurrScriptions Flea and Tick, PurrScriptions Plus Flea and Tick Spray, Sentry PurrScriptions Flea Comb, and Sentry Fly Repellent Spray.

The PetArmor brand offers a wide range of flea & tick and dewormer products for dogs and cats. The flea & tick products for dogs consist of PetArmor Plus, PetArmor, PetArmor FastCaps, PetArmorAdvanced 2 Flea Treatment for Dogs, PetArmor Flea & Tick Collar for Dogs, PetArmor LongLast Fipronil Flea and Tick Spray, PetArmor Plus Shampoo, PetArmor Naturals for Dogs Topical, and PetArmor Naturals Spray for Dogs. The Flea & Tick Home products consist of PetArmor Home Home and Carpet Spray, PetArmor Home Household Spray, PetArmor Home Carpet Powder, and PetArmor Fastact Plus Flea & Tick Spray. The flea and tick products for catsa consists of PetArmor Plus, PetArmor, PetArmor FastCaps, PetArmor Advanced 2 Flea Treatment for Cats, PetArmor LongLast Fipronil Flea and Tick Spray, PetArmor Naturals for Cats Topical, PetArmor Naturals Spray for Cats.

In addition to the flea and tick products, Perrigo also offers dewormers for puppies and small dogs. Perrigo's sales of flea and tick products under its Sergeant's and PetArmour brands total \$124.5 million in 2016.

In 2016, the company's sales of animal health segment are estimated at \$2.7 billion.

MARKETING POLICIES

The animal health business is subject to cyclical demand for flea and tick products that peaks during warmer days of the year. Perrigo concentrates on building customer's store brand business and employs its sales force to serve customers. The field sales employees are allocated to specific customers to cater to the customers' demand more effectively. Perrigo dedicates its sales force to carry out in-store marketing programs. The key objective of store brand management is to enable Perrigo's customers, retailers, and wholesalers to increase sales of their own brand products by communicating store brand quality and value to the customers.

ADVERTISING

Perrigo creates product awareness through direct to consumer advertising that includes online advertising, television commercials, display vehicles, and social media. Together, with the in-store marketing programs, Perrigo markets products directly to consumers and healthcare professionals.

In 2016, Perrigo, under the Sergeant's brand has TME expenditures of just over \$3.2 million with approximately 75% for spot TV and the balance for cable TV.

FACILITIES

Perrigo is located in Dublin, Ireland, and has employed around 13,500 employees worldwide. Furthermore, the company has administrative offices in Allegan, Michigan. The company owns nearly 60.0% of its facilities and lease the remaining. Perrigo has 59 facilities within the United States and the rest are distributed in other countries.

OUTLOOK

During fiscal year 2016, 60.0% of the companies' consolidated sales were attributable to Consumer Healthcare segment and 72.0% of consolidated net sales originated in the United States. The strategic acquisitions by Perrigo are likely to boost the sales of pet insecticides in the market. In order to maintain its position in the market, the company is planning at introducing innovative products. The company is spending on advertising and marketing of its products. The company is also strategically discontinuing products that are less profitable. Sales of animal health pet insecticides are estimated to grow at a rate of 2.5% to reach \$140.8 million by 2021.

Table 9-48: Perrigo's Outlook for Pet Insecticides, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	124.5	-
2021	140.8	2.5

PIC CORPORATION

OVERVIEW

Privately held PIC Corporation of Orange, NJ, is a family-run business that offers a range of products for the control of flying insects, crawling insects, and rodents.

The company was founded in 1953 with the importation of a mosquito repellent from Japan. Its name originated from the active ingredient used in the coil: Pyrethrum, which led to the name Pyrethrum Insecticide Coil, or PIC. By 1973, PIC began manufacturing its original mosquito repellent coil in Linden, NJ, in the first automated mosquito coil plant in the world. The coils were widely offered at drive-in theaters. As the company grew, PIC moved to a larger, multileveled facility in Orange, NJ, expanding from 3,000 sq ft to locations on three continents for manufacturing, sales, and shipping. PIC now manufactures and markets household insecticides, insect repellents, rodent glue traps, and sticky fly strips for consumer use. It also produces household insecticides under a private label. The company has been awarded a “Mobius Certificate of Excellence” for the Home Care and Maintenance Products: Insecticide Packaging category.

PIC Corporation has received the Parents Tested Parents Approved (PTPA) Winner’s Seal of Approval for their Twist It Mosquito Repeller. In 2011, PIC Corporation received an award in the personal, health & garment care category for its product Bugables Mosquito Repellent Stickers at the 9th annual Housewares Design Awards.

SALES AND PROFITS

PIC Corporation is privately held and releases limited financial information. Corporate sales are estimated at a rounded \$11.4 million in 2016. U.S. sales account for 80% of the corporate sales. Around 75% of the company’s products are sold under its own brand names of PIC and DOA, with the remaining 25% private labeled. About 70% of sales are made through distributors/brokers, and 30% of sales are made directly to retailers. PIC’s products are also available at online retailers including Amazon, Face Values, and Walgreens, among others. PIC does not sell any products specifically for professional use. While more than half of the company’s sales are comprised of non-chemical products such as baits and traps, the remaining is divided between insecticides and insect repellants.

CONSUMER PESTICIDES AND FERTILIZERS

The company's products are organized into five groups: rodent control, flying insect control products, roach control, ant control, and mosquito control. The rodent control line includes Baited Glue Mouse Traps, Glue Mouse & Rat Boards, Easy Kill Mouse Trap, Glue Mouse Boards, Humane Catch & Release Mouse Trap, Plastic Mouse Trap, and Sonic Rodent Repeller. Flying insect control products include Fly Ribbon, Fly Trap, Fly Stick, Fruit Fly Trap, Insect Killer LED Bulb, Jumbo Flystick Cylinder, Metal Handle Fly Swatters, Plastic Fly Swatters, and Screen Repair. These products are used to control flies, bees, moths, wasps, and gnats.

The roach control product line includes Roach Control Systems, Roach Killing Gel, Boric Acid Roach Killer Powder, and Roach Prison. The Roach Prison consists of two traps that are effective in places where poison cannot be used, such as in where children or pets are present. PIC offers effective indoor and outdoor solutions for ant control. These products include Homeplus Ant Killer, Liquid Ant Killer with applicator, and Ant Traps.

The Mosquito Control products are economical, ready-to-use, and effective. These products consist of Mosquito Repellent Coils, Bite Relief, Bugables Adjustable Mosquito Repellent Bands, Bugables Mosquito Repellent Stickers, Citronella Bands, Citronella Mosquito Repellent Diffuser, and Citronella Plus Lanterns.

The company has recently launched a few products like Bugables Mosquito Repellent Stickers and Twist It Mosquito Repeller. The company also plans to launch specific control products for bed bugs, spiders and insecticide-free products.

Currently, all of PIC's sales are into the household market. Branded products are sold under the PIC label and account for approximately 75% of sales.

Table 9-49: PIC's Sales of Pesticides by Product Type, 2016

Product category	\$ Thousand	% Of total
BRANDED		
Insecticides	1,710	15
Insect repellents-a	2,500	22
Other-b	4,450	39
Total	8,660	76
PRIVATE LABEL		
Household insecticides	2,740	24
TOTAL	11,400	100
a- Includes mosquito coils.		
b- Includes glue traps, fly sticks, and fly ribbons.		

MARKETING POLICIES

PIC Corp. sells its products throughout the country largely through local retailers, although some national chains, such as Walgreens, stock the PIC line. PIC also has an online presence at www.pic-corp.com; buyers and distributors can visit the site to purchase products, although the website is not enabled for retail sales to consumers. The company has three sales representatives and works with another 30 manufacturers' reps. The majority of the retail sales happen in the east, west, and mid-west regions of the United States.

The company's products are available at 99 Cents, Dollar Tree, Fred Meyer, Fred's, HEB, Supervalu, Walgreens, and Walmart in the states of California, Virginia, Oregon, Tennessee, Texas, Minnesota, and Arkansas.

The company has also started sales through the online retailers such as Academy, AIH, Alice, Amazon, Aubuchon Hardware, Face Values, Menards, The Home Depot, and Walgreens.

ADVERTISING

PIC engages in limited advertising, with no traceable media expenditures identified in 2016. Its marketing and promotional activities are also limited, focused mainly on retailer promotions.

FACILITIES

PIC employs approximately 55 persons at its headquarters and manufacturing facility in Linden, NJ and sales personnel in various locations around the United States.

In 2006, the company engaged Figtree Consulting to upgrade its shipping and receiving processes. These processes were inefficient, time-consuming, and held a potential for error and loss of data. The receiving process required several steps including hand entry of warehouse receipts, then reentry of this data into an office accounting system; the shipping process required multiple steps, including the printing of labels and Bills of Lading outside of the accounting system. Figtree installed a real-time financial and inventory system that would gather data from its warehouse, produce all shipping papers (package level detail, Bill of Lading and Advanced Shipping Notice (ASN) information) and update this information into its accounting system for invoicing and reporting. As a result, the company was able to reduce its staff by 40%.

OUTLOOK

As with other manufacturers of insect repellent products, PIC will benefit from the growing awareness of mosquito-borne diseases due to the much-publicized threat of the Zika virus. The company's regional focus, limited sales and marketing capabilities and relatively slow pace of new product introductions will hinder its growth behind many of its more dynamic competitors who are looking to adopt aggressive strategies. PIC's reputation of providing natural-based products keeps it in line with current customer preferences. Through the forecast period, sales are expected to rise by 4.0% per year to reach \$13.9 million in 2021.

Table 9-50: PIC's Outlook for Pesticides, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	11.4	-
2021	13.9	4.0

RECKITT BENCKISER

OVERVIEW

Reckitt Benckiser PLC, which is headquartered just outside London, England, is a publicly held global manufacturer and marketer of brand name consumer products. The company has operations in more than 60 countries and sells its products in 180 countries around the world.

Its brands fall into these categories: health, hygiene, home, and portfolio brands (including food). The health and hygiene categories are the major groups, accounting for 33.7% and 41.1% of net revenue, respectively. While primarily sold to consumers, Reckitt Benckiser's products are also used in professional markets to clean and disinfect hospitals, nursing homes, schools, hotels, resorts, and other institutions, and are sold to food manufacturers and the food service industry.

Reckitt & Sons, which eventually became Reckitt Benckiser, was launched on the London Stock Exchange in 1888. Its roots trace back to 1814 when Jeremiah Colman began milling flour and mustard in Norwich, United Kingdom. Then in 1823, Johann A. Benckiser founded a core business derived from industrial chemicals, and in 1848, Isaac Reckitt bought a starch mill in Hull. The company was known as Reckitt & Colman PLC before its December 1999 merger with Benckiser N.V., which made it the number one producer of household cleaning products in the world.

Since then, Reckitt Benckiser has grown briskly, as a result of both organic growth as well as several key acquisitions. In early 2006, Reckitt Benckiser completed its acquisition of Boots Healthcare International for \$1.9 billion, which broadened its presence in the health care market, particularly in over-the-counter drugs. Reckitt Benckiser further expanded this position through its January 2008 acquisition of Adams Respiratory Therapeutics for \$2.2 billion.

In 2010, Reckitt Benckiser acquired SSL International, a British manufacturer of healthcare products with brands like Durex condoms, Scholl sandals, Sauber, and Mister. SSL is now reported within the health and personal care product category of Reckitt Benckiser.

In April 2011, Reckitt Benckiser completed the acquisition of Paras Pharmaceuticals Limited, an Indian consumer healthcare company, having strong local brands like Moov topical pain ointment, Dermicool powder for prickly heat, D'Cold cold and flu remedy tablets and syrups, and Krack medicated skin treatment for cracked heels.

In February 2017, Reckitt Benckiser announced that it has entered into an agreement with Mead Johnson Nutrition Company to acquire the company. As a result, Mead Johnson will become a new division of Reckitt with its globally recognized consumer health brands.

SALES AND PROFITS

In 2016, Reckitt Benckiser reports total corporate sales of \$8,940 million, up 2% at constant exchange rates. Operating profit increased 8%, at constant exchange rates, to \$2,178 million in 2016. Growth was driven by growth in emerging markets and brands like Dettol, Nurofen, Mucinex, Strepsils, Gaviscon, and Harpic, which accounted for more than 60% of the total sales in 2016. Some part of this high growth can also be attributed to high growth in sales of the recently acquired companies by Reckitt Benckiser. Significant investments were made towards media and marketing and successful new product initiatives boosted the overall performance. Profit growth resulted from strong gross margin expansion. North America witnessed an increase of 12% in revenue over 2015.

Key Reckitt Benckiser products include Lysol cleaners and disinfectants, Mucinex, Calgon water softener, Woolite fine fabric wash, Spray 'N Wash stain remover, Old English furniture wax, French's mustards, and Frank's Red Hot Sauce. Most of its brands command the number one or number two positions in their categories.

Table 9-51: Reckitt Benckiser's Corporate Sales by Category, 2016

Category	\$ Million	Growth, % (2015–2016)
Health	3,012	3
Hygiene	3,675	5
Home	1,652	2
Portfolio brands (including food)	601	5
Total	8,940	

CONSUMER PESTICIDES

Reckitt Benckiser is the major supplier of rodent control products in the U.S. market with sales driven by its d-CON brand, which features bait or traps to kill rats and mice in a variety of presentations. Widely available at major retailers including CVS, Walgreens, Lowes, Home Depot, and Wal-Mart, the d-CON line includes a variety of baits such as d-CON Ultra Set Covered Snap Trap, d-CON Discreet No View, No Touch Trap, d-CON No View No Touch Trap, d-CON Quick Kill Glue Trap, d-CON Refillable Corner Fit Bait Stations, d-CON Disposable Corner Fit Bait Stations, d-CON Glue Boards, d-CON Glue Traps, and d-CON All Set Snap Traps. The d-CON product line was acquired from Lehn & Fink in September 1994, when the company purchased Lehn & Fink's household business from Eastman Kodak for \$1.5 billion.

Reckitt Benckiser's sales of d-CON consumer rodenticides are estimated at \$120 million in 2016.

Reckitt Benckiser's extensive line of Mortein insecticides, which is a part of the home care category, is not marketed in the United States.

MARKETING POLICIES

In 2009, Reckitt Benckiser launched its new corporate brand identity with a new logo "RB." They also initiated a tagline to promote their top selling brands: "The Power behind the Powerbrands"

Reckitt Benckiser is the dominant supplier of consumer rodenticides in the United States, with no close competitor for the d-CON brand. The company's sales force of more than one hundred representatives sells the products directly to supermarkets and grocery stores, lawn and garden centers, mass merchandise stores, and hardware stores. There are also limited sales through distributors. Sales of rodenticides are strongest in the Midwest and Southeast, where the hot and wet climate supports high rodent reproduction.

The company maintains a dedicated website for the d-CON line, d-conproducts.com, which describes product offerings and offers information about rodent control. Consumers may also register to receive a periodic e-mail newsletter containing product information, special offers, and sweepstakes opportunities.

Following a series of accidents of small children consuming rat poison, the EPA presented a RMD (Risk Mitigation Decision) in 2011, a set of new regulations intended to keep highly toxic second-generation rodenticides out of the reach of children. The most significant impact of the RMD is the EPA's regulation to end access to any rodenticide containing a second-generation active ingredient and any product that is sold in loose-bait form.

In May 2014, Reckitt entered into an agreement with the EPA that bans the sale of 12 d-Con products nationwide. The list of products that are banned include d-CON Concentrate Kills Rats & Mice, d-CON Ready Mixed Kills Rats & Mice, d-CON Mouse Prufe Kills Mice, d-CON Pellets Kills Rats & Mice, d-CON Mouse Prufe II, d-CON Pellets Generation II, d-CON Bait Pellets II, d-CON Ready Mixed Generation II, d-CON Mouse-Prufe III, d-CON Bait Pellets III, d-CON II Ready Mix Baitbits III, and d-CON Bait Packs III.

ADVERTISING

Reckitt Benckiser does varying amounts of advertising to support its d-CON product line. In 2016, there is no TME for the d-CON product line.

FACILITIES

Reckitt Benckiser has its U.S. headquarters, including management for the d-CON brand, in Parsippany, NJ, having moved there from Wayne, NJ, in 2003. The Research & Development Center is in Montvale, NJ.

Five manufacturing plants are located throughout the United States, including Mississippi, where d-CON pesticides are manufactured. As of early 2017, Reckitt Benckiser employs 35,000 people worldwide.

OUTLOOK

Over the next several years, Reckitt Benckiser is expected to remain the dominant supplier of rodenticides for the consumer market with high brand awareness of the d-CON line and continued strong sales and marketing support. Key trends that will support ongoing demand for rodenticides include population movement into rural areas, and rising hurricane and storm activity throughout the United States.

Reckitt Benckiser's sales of the d-CON range of consumer rodenticides in are expected to grow by an average of 2.5% per year to reach around \$135.8 million in 2021.

Table 9-52: Reckitt Benckiser's Outlook for d-CON Products, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	120.0	-
2021	135.8	2.5

S.C. JOHNSON

OVERVIEW

Based in Racine, WI, S.C. Johnson and Son, Inc. is one of the world's largest consumer product companies with several well-known brands including Glade air fresheners, Pledge furniture polish, Windex window cleaner, Shout stain removers, Ziploc plastic bags, OFF! insect repellents, and Raid insecticides. These are available in more than 110 countries. In the U.S. consumer market, S.C. Johnson is the leading producer of insect repellents and insecticides. The company remains 100% owned by the Johnson family.

S.C. Johnson entered the consumer lawn and garden market through the acquisition of Security Chemical Company in August 1984 and Chacon Chemical Company, a subsidiary of Garden America, in February 1987. Chacon was merged with Security to form Security Products Company. In December 1989, S.C. Johnson divested Security. S.C. Johnson is no longer involved in the lawn and garden market other than through the sale of outdoor insecticides contained within its household insecticide product lines.

In July 1995, S.C. Johnson's Professional division acquired Whitmire Research Laboratories (St. Louis, MO) and merged it with its Micro-Gen Equipment Corp. (originally of San Antonio, TX) unit, which became a subsidiary of S.C. Johnson's in 1994. Both Whitmire and Micro-Gen, now called Whitmire Micro-Gen Research Laboratories, Inc., produce pesticide formulations and equipment for the professional pest control industry. In June 2004, however, S.C. Johnson divested Whitmire to U.K.-based Sorex Group, a leading manufacturer of professional pest control products for the European market. The divestiture removed S.C. Johnson from the professional insecticide market, leaving only its consumer business.

In December 2002, S.C. Johnson acquired the household insecticides unit of Bayer AG, adding insect control, cleaning, and air freshening items that had sales in 2001 of \$396 million. The buyout provided Johnson with worldwide rights to the Bayer brands Baygon, Autan, Bayclin, and Bayfresh, among others. Bayer continues to supply the active ingredients to Johnson on a non-exclusive basis.

S.C. Johnson continues to maintain a reputation as an excellent corporate citizen, receiving a perfect 100% rating on the Human Rights Campaign's annual Corporate Equality Index report in each year since 2003. The company contributes a minimum of 5% of its pretax profits for programs designed to improve quality of life around the world. Furthermore, from 2005 to 2007, S.C. Johnson was ranked by *Fortune Magazine* as one of the top 10 "Companies to Work For" in their annual ranking and in 2007, it ranked #7. In 2010, S.C. Johnson was named the fourth most innovative company in the consumer products category on *Fast Company* magazine's annual Most Innovative Companies list.

In 2011, S.C. Johnson challenged U.S. EPA regulations that came into effect in 2006 and involved deep review of pesticide studies that use human subjects. According to S.C. Johnson, such regulations only contribute to stifling and demotivating research efforts in the field of pesticides. S.C. Johnson also added that in addition to the extra cost involved in adhering to the new guidelines, a lot of time is wasted before a chemical ingredient is reviewed by EPA.

In June 2014, S.C. Johnson's Raid brand introduced new Raid Defense System to solve the bug problems in the United States.

In April 2015, S.C. Johnson acquired ACI Insecticides, Angelic Air Care and Vanish Toilet Cleaner brands from ACI Limited in Bangladesh. The acquisition strengthened the company's presence in the growing market of Bangladesh.

In March 2015, S.C. Johnson entered into an agreement to acquire HomeBrands A.S. from UNILEVER CR, spol.s.r.o in the Czech Republic. The acquisition helped the company in expanding its products offering in the Czech Republic, Slovakia, and the Baltics. HomeBrands product portfolio further complements the S.C. Johnson's brands such as Raid, OFF!, and Glade.

S.C. Johnson has been involved in donating OFF! Mosquito repellent for the U.S. territories, aimed at protecting people from Zika virus. In March 2016, S.C. Johnson donated more than 60,000 cans and bottles of OFF! insect repellent to the Centers for Disease Control and Prevention (CDC) Foundation.

In May 2016, S.C. Johnson introduced Raid Bed Bug Detector & Trap, a new early-detection product that enables consumers to expose evidence of bed bugs prior to and infestation.

SALES AND PROFITS

S.C. Johnson is privately held and releases limited financial information. Sales of total consumer products are estimated at \$9.6 billion for the company's 2016 fiscal year ending June 30. The retail sales of S.C. Johnson's consumer insect repellants and insecticides are estimated at \$425 million.

CONSUMER PESTICIDES AND INSECT REPELLENTS

S.C. Johnson is the leading U.S. supplier of insect repellents. Its products are sold under the OFF! brand name. The line includes OFF! Clip-On Mosquito Repellent, OFF! Deep Woods, OFF! Family Care, OFF! Active, OFF! Mosquito Lamp, OFF! Tabletop, OFF! Patio & Deck, and OFF! Backyard. The OFF! products contain various amounts of the insect repellent *N,N*-diethyl-meta-toluamide (DEET).

The Deep Woods line is formulated with a high level of active ingredients for long-lasting effectiveness, and is designed to repel mosquitoes that may carry West Nile Virus. It is available both in the form of a spray and a towelette. The product provides long lasting protection from mosquitoes, ticks, biting flies, gnats, and chiggers. OFF! Deep Woods Sportsman is highly effective in offering protection in intense bug-biting situations. This product repels mosquitoes, ticks (including ticks that carry Lyme disease), chiggers, fleas, stable flies, black flies, gnats, and deer flies. It is available both as an aerosol and as a pump/spray. The products offered under OFF! Deep Woods include OFF! Deep Woods Insect Repellent V, OFF! Deep Woods Insect Repellent V111, OFF! Deep Woods Insect Repellent Towelettes, and OFF! Deep Woods Insect Repellent VII Mini Pump Spray. These products provide protection against biting insects including ticks, mosquitoes, chiggers, and others.

In January 2006, S.C. Johnson introduced OFF! Active. The line contains a mid-level amount of DEET along with sunscreen for consumers seeking a sweat-resistant product that could be used in conjunction with sports or other outdoor activities. OFF! Active Insect Repellent provides sweat-resistant protection that helps in keeping biting insects away.

In 2007, S.C. Johnson renamed its OFF! Skintastic line, retaining the basic lineup of products but rebranding them as OFF! Family Care to encourage use by both adults and children. OFF! Family Care consists of products such as OFF! FamilyCare Insect Repellent I, OFF! FamilyCare Insect Repellent IV (Unscented), OFF! FamilyCare Insect Repellent II (Clean Feel), OFF! Insect Repellent III (Tropical Fresh), OFF! FamilyCare Insect Repellent IV Mini Pump Spray, and OFF! FamilyCare Bite and Itch Relief. This line contains the lowest level of DEET of all OFF! products.

OFF! FamilyCare Insect Repellent I is an advanced powder formula that dries on contact and lasts for nearly 6 hours. OFF! FamilyCare Insect Repellent IV (Unscented) provides protection during shorter amount of outdoor time. It lasts for nearly 2 hours. OFF! FamilyCare Insect Repellent II (Clean Feel) consists of picaridin that provides protection against insects. OFF! Insect Repellent III (Tropical Fresh) provides protection against insects for a shorter period of time. It is formulated with a light scent so that one can stay away from the mosquitoes and smell well. OFF! FamilyCare Insect Repellent IV Mini Pump Spray is formulated with unscented formula that contains aloe vera. It provides protection against mosquitoes. OFF! FamilyCare Bite and Itch Relief is applied just after the insect bite. It is used to counteract the effects of stings and bites of mosquitoes, bees, ticks, ants, and other insects.

In 2009, the company introduced its OFF! clip-on mosquito-repellent which was a big hit in the market. The company also offers OFF! Clip-On Mosquito Repellent and OFF! Clip-On Mosquito Repellent Refills. The OFF! Clip-On Mosquito Repellent can be clipped to a belt, purse or waistband for mosquito protection. OFF! Clip-On Mosquito Repellent Refills are sold separately for use with OFF! Clip-On Mosquito Repellent fan units. The repellent disk provides protection for nearly 12 hours. The product offers an alternative to applying insect repellent directly to the skin. Exceeding its sales by 400% in the first month, it continues to boost sales for the OFF! brand in the U.S. market.

The other products offered by S.C. Johnson include OFF! Citronella Bucket, OFF! Triple Wick Citronella Candle, OFF! Mosquito Lamp, OFF! Mosquito Lamp Refills, OFF! Bug Control, OFF! Outdoor Fogger, OFF! Mosquito Coil, and OFF! Mosquito Coil Refills.

Table 9-53: S.C. Johnson's Selected OFF! Range of Products, 2016

Product	Form	Active ingredient %
OFF! DEEP WOODS		
OFF! Deep Woods	Fragrance-free pump	25
OFF! Deep Woods	Aerosol	25
OFF! Deep Woods	Towelettes	25
Deep Woods OFF! for Sportsmen	Unscented aerosol	30
Deep Woods OFF! for Sportsmen	Pump/Spray	25
Deep Woods OFF! for Sportsmen	Pump/Spray	100
OFF! ACTIVE		
OFF! Active	Aerosol	15
OFF! Active	Pump/Spray	25
OFF! Active 30 SPF Lotion	Lotion	10
OFF! FAMILY CARE		
OFF! Family Care Smooth & Dry	Aerosol	15
OFF! Family Care Clean Feel	Pump/Spray	5
OFF! Family Care Tropical Fresh	Pump/Spray	5
OFF! Family Care Unscented	Pump/Spray	7
OFF! Family Care	Towelettes	5
OFF! CLIP-ON		
OFF! Clip-On Mosquito Repellent	Refill	60

S.C. Johnson is also the largest U.S. supplier of household insecticides, with Raid as its original insecticide brand. The Raid line includes products for control of ants, roaches, fleas, spiders, crickets, silverfish, wasps, hornets, and other flying insects. The products come in easy-to-use aerosol cans and are available in fragrances or unscented. The products include Raid Ant & Roach, Raid Ant Baits, Raid Ant Gel, Raid Ant Killer 26, Raid Bed Bug Detector, Raid Concentrated DEEP REACH Fogger, Raid Double Control Ant Baits, Raid Double Control Large Roach Baits, Raid Double Control Small Roach Baits, Raid Flea Killer, Raid Flea Killer Plus Carpet & Room Spray, Raid Flea Killer Plus Fogger, Raid Flying Insect Killer, Raid Fumigator, Raid House & Garden, Raid Max Ant & Roach, Raid Max Bed Bug & Flea Killer, Raid Max Bug Barrier, Raid Max Bug Barrier Defense Marker, Raid Max Double Control Ant Baits, Raid Max Spider & Scorpion Killer, Raid Roach Gel, Raid Wasp & Hornet Killer, and Raid Yard Guard Mosquito Fogger. The products are made to target the hard-to-reach areas and provide wide coverage for large surfaces. S.C. Johnson has also added Raid Ant & Roach Killer Lemon Scent to the line, a lemon-scented version with a more appealing fragrance.

In December 2006, S.C. Johnson discontinued its Earth Options products, a relatively new line that was formulated with natural ingredients and was designed to fit with rising consumer preferences for environmentally-friendly products. The three plant-based, clove-scented items, which suffered from low consumer acceptance, include Raid Earth Options Ant & Roach Killer, Raid Earth Options Wasp & Hornet Killer and Raid Earth Options Flying Insect Killer. The company has also discontinued several duplicative line items including Raid Concentrated Fogger, Raid Max Fogger, and Raid Ant Bait Plus.

Table 9-54: Selected Raid Products and their Active Ingredients, 2016

Product	% Active ingredient
ROACH CONTROL	
Raid Ant & Roach Killer (Lemon Scent, Country Fresh, Outdoor Fresh, Fragrance Free)	0.1% cypermethrin 0.1% imiprothin
Raid Outdoor Ant & Roach killer	0.2% tetramethrin 0.2% permethrin
Raid Max Roach Killer	0.101% imiprothin 0.05% deltamethrin
Raid Double Control Large Roach Baits	0.05% abamectin
Raid Double Control Small Roach Baits	0.05% abamectin
Raid Double Control Small Roach Baits Plus Egg Stoppers	0.05% abamectin
Raid Ant & Roach Killer with GermFighter	0.1% O-phenylphenol 0.1% pyrethrins 0.2% permethrin
WASP CONTROL	
Raid Wasp & Hornet Killer	0.2% tetramethrin 0.2% permethrin
(Continued)	

Table 9-54: Selected Raid Products and their Active Ingredients, 2016

Product	% Active ingredient
ANT CONTROL	
Raid Ant Bait III	0.05% abamectin
Raid Outdoor Ant Spikes	0.05% abamectin
Raid Double Control Ant Baits	0.05% abamectin 0.5% sulfonamide
Raid Scent Ant Killer Pine Forest Fresh	0.2% pyrethrins 0.13% permethrin
Raid Max Double Control Ant Baits	0.05% abamectin
FLEA CONTROL	
Raid Flea Killer	<1.0% piperonyl butoxide <1.0% pyrethrum extract
Raid Flea Killer Plus Fogger	0.50% pyrethrins 0.075% methoprene 1.67% N-octyl bicycloheptene dicarboximide
Raid Flea Killer Plus Carpet & Room Spray	0.14% pyrethrum 0.064% tetramethrin 0.015% methoprene
YELLOW JACKET CONTROL	
Raid Yellow Jacket Trap	Natural, non-toxic attractant
FLIES AND MOSQUITOES	
Raid Flying Insect Killer	0.5% piperonyl butoxide 0.143% D-cis trans allethrin 0.143% sumithrin
Raid Yard Guard Outdoor Fogger	0.1-1% Permethrin 0.1-1% Allethrin
HOUSE AND GARDEN	
House & Garden Bug Killer	0.096% phenothrin 0.23% d-trans Allethrin
WASPS AND HORNETS	
Raid Wasp & Hornet Killer	0.05% cis-, trans- Cypermethrin 0.02% Prallethrin
FOGGERS	
Raid Fumigator	12.6% permethrin
Raid Max Concentrated Deep Reach Fogger	1.716% cypermethrin
Raid Yard Guard Outdoor Fogger	0.143% d-trans Allethrin 0.225% permethrin

MARKETING POLICIES

Approximately 350 company sales representatives market S.C. Johnson's products directly to large retail chains, wholesalers, and jobbers. All products are sold nationally, and are available at a broad range of food stores including Albertson's, Acme, and ShopRite; drug stores such as Long's, Walgreen's, RiteAid, and Duane Reade; hardware stores including Ace, True Value, and Sears; and home centers such as Home Depot and Lowe's. Products are also available in warehouse club outlets, typically in larger sizes and multipacks. However, Wal-Mart remains the leading retail outlet for S.C. Johnson's insect repellent and insecticide products, accounting for more than one-fourth of U.S. sales of OFF! and Raid.

FACILITIES

S.C. Johnson's executive offices are located in Racine, WI. Manufacturing of most insecticides and insect repellents is done at the company's Racine, WI, facility, referred to as the Waxdale plant. S.C. Johnson employs about 13,000 people in more than 70 countries worldwide.

ADVERTISING

S.C. Johnson's TME expenditures in 2016 totaled \$31.8 million, with about \$13.7 million being spent on the OFF! Brand and \$18.1 million spent on the RAID brand. The majority of expenditures spent on the OFF! Brand were for various forms of television advertisements (cable, spot, network, syndicated). For the RAID brand, approximately \$17 million was spent for RAID Ant and Roach Killer, and was also used for various forms of television advertisements.

OUTLOOK

S.C. Johnson continues to dominate the highly competitive U.S. insecticide and insect repellent market with a combination of strong brand awareness, savvy marketing and selected new product introductions. Over the years, the company has pared its product line to eliminate redundancy, while filling gaps in its portfolio with the introduction of new products. S.C. Johnson also maintains strong ties to leading mass merchandisers such as Walmart, which continue to expand their share of retail sales through new store openings and existing store expansions.

S.C. Johnson's sales of consumer insecticides and insect repellents are projected to show steady growth through the forecast period, reflecting annual population increases of about 1% per year and rising consumer awareness of insect-borne diseases, such as Zika and West Nile Virus. Sales should reach more than \$492.7 million in 2021, an annual increase of approximately 3.0%.

Table 9-55: S.C. Johnson's Outlook for Consumer Pesticides and Insect Repellents, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	425.0	-
2021	492.7	3.0

SBM DÉVELOPPEMENT (SBM)

OVERVIEW

In 1894, Dr. A Hubert founded a laboratory for agricultural analyses and research in Beziers, in the south of France. In 1923, it was turned into a limited company called La Littorale SA. Until 1935, the company manufactured pesticides, wine-growing products and fertilizers in the region. Eventually, distribution of these products extended to all the French wine-producing regions. From 1935 on, La Littorale diversified to cover all crops, and began to grow internationally. In 1967, La Littorale became a subsidiary of Union Carbide. In 1987, Rhone-Poulenc acquired Union Carbide's agro-chemical businesses.

In 1994, SBM took over the Beziers industrial site, and it became SBM Formulation. In 2000, SBM Développement group acquired ABREVO's site in Marseille. The company currently has a presence in nearly 20 countries in Europe and North America. SBM is a leader in the home and garden market in France. Their activity relies on three pillars: R&D, Industry (comprised of two formulation and packaging factories in France), and Distribution, (with Novajardin, a unit dedicated to consumers and offering the brands Solabiol, Capiscot, Caussade and ANTI), and CMPA, a unit dedicated to crop professionals.

In October 2016, SBM acquired Bayer Garden and Bayer Advanced businesses in both Europe and North America, and it has created a separate business unit named SBM Life Science to manage the consumer pesticide market. SBM Life Science has its headquarters in France and provides plant protection, home and garden care products.

SALES AND PROFITS

In 2015, SBM recorded sales of €70.0 million or \$77.0 million (inclusive of subsidiary sales).

CONSUMER PESTICIDES AND FERTILIZERS

As noted above, SBM acquired the Bayer Garden and Bayer Advanced businesses in 2016. The acquisition involves the purchase of the consumer business of Bayer Environmental Science, a business unit of the Crop Science division. These businesses are grouped with the SBM's Novajardin consumer brands, in a new business unit named SBM Life Science. Novajardin sells products for plant care through four brands, namely, Solabiol, Capiscot, Caussade, and Anti. The Bayer products acquired by SBM feature easy-pour spouts and measuring cups, and easy-to-read front and back labels, all with money-back guarantees.

SBM Life Science is now among the leading providers of plant protection and garden care products. The unit is formed with the aim of developing innovative products to meet the requirements of the consumer.

Manufacturing activity is represented by SBM Formulation and its Iris subsidiary. SBM formulation provides formulation technologies in the market, both in the liquid and solid fields. Iris caters to the professional and home & garden market. It specializes in the formulation of herbicides, and biocontrol products, as well as in packaging and crop protection products.

Bayer's product line, now sold by SBM Life Science, includes following products:

■ Lawn products:

- Natria Snug and Snail Killer Bait
- Season Long Grub Control Plus Turf Revitalizer
- 24 Hour Grub Killer Plus
- Dual Action Snail & Slug Killer Bait
- Fire Ant Killer Dust
- Powerforce Multi-Insect Killer – Granules and Liquid
- Season-Long Grub Control
- Vegetable & Garden Insect Spray

■ Indoor products:

- Dual Action Snail and Slug Killer Bait
- Natria Home Pest Control
- Home Pest Plus Germ Killer Indoor & Outdoor Insect Killer
- 2-in-1 Insect Control Plus Fertilizer Plant Spikes
- Complete Brand Insect Dust For Gardens
- Home Pest Control Indoor & Outdoor Insect Killer

■ Garden products:

- Natria Insecticidal Soap
- Natria Insect, Disease & Mite control
- Natria Multi-Insect Control
- Natria Snail & Slug Killer Bait
- All-In-One Rose & Flower Care
- 12 Month Tree & Shrub Protect & Feed
- 24 Hour Grub Killer Plus
- 2-In-1 Systemic Rose & Flower Care
- 3-In-1 Insect, Disease & Mite Control
- Carpenter Ant & Termite Killer Plus
- 12 Month Tree & Shrub Insect Control Landscape Formula
- 2-In-1 Insect Control Plus Fertilizer Plant Spikes
- Complete Brand Insect Dust For Gardens
- Complete Brand Insect Killer For Gardens Ready-To-Use
- Dual Action Rose & Flower Insect Killer
- Dual Action Snail & Slug Killer Bait
- Fire Ant Killer Dust
- Powerforce Multi-Insect Killer - Granules and Liquid
- Vegetable & Garden Insect Spray

■ Vegetables and fruits products:

- Fruit, Citrus & Vegetable Insect Control
- Natria Insecticidal Soap
- Natria Insect, Disease & Mite Control
- Natria Multi-Insect Control
- Natria Snail & Slug Killer Bait
- Complete Brand Insect Dust For Gardens
- Dual Action Snail & Slug Killer Bait
- Powerforce Multi-Insect Killer – Liquid
- Vegetable & Garden Insect Spray

■ Termites products:

- Termite Killer Granules
- Carpenter Ant & Termite Killer Plus

Table 9-56: SBM's U.S. Sales of Consumer Pesticides and Fertilizers, 2016

Product category	\$ Thousand	% Of total
INSECTICIDES		
Outdoor	40,500	56.1
Household	12,300	17.0
Total	52,800	73.1
HERBICIDES	16,250	22.5
FUNGICIDES	3,125	4.3
TOTAL	72,175	100.0

Because there is no information available on which to base a split between SBM's and Bayer's sales of the above product lines for 2016, this table includes Bayer's sales of these products for the year as well as SBM's. Bayer's profile in this report is based only on its pet insecticide segment.

MARKETING POLICIES

SBM markets and distributes its products in three markets, namely, the agricultural, the home & garden, and aromatherapy. In the agricultural market, the company distributes products through national distributors in France, Europe and North Africa. In the home and garden market, the company distributes products through four distribution channels: self-service farm stores, garden centers, DIY supermarkets, and large food supermarkets.

ADVERTISING

There is no TME reported for SBM Développement in 2016.

FACILITIES

SBM is a France-based company that operates in more than 20 countries globally. It has a presence in France, United States, Spain, Poland, Ukraine, Norway, Sweden, Finland, Russia, Germany, and other European countries. The company's Beziers site has sustainable capacity and specializes in fungicides, insecticides, and molluscicides. Moreover, its Salindres site specializes in the formulation of herbicides and biocontrol products.

OUTLOOK

SBM, by combining their own expertise with Bayer's well-established product line, is expected to offer an innovative portfolio of lawn and garden products that will meet the demand of the consumers. This is forecast to be in keeping with a steady growth in these segments of 2.0%.

Table 9-57: SBM's Outlook for Consumer Pesticides and Fertilizers, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	72.2	-
2021	79.7	2.0

THE SCOTTS MIRACLE-GRO COMPANY

OVERVIEW

The Scotts Miracle-Gro Company traces its roots to O.M. Scott & Sons, which was founded in 1868 by O.M. Scott in Marysville, OH, as a premium seed company for the U.S. agricultural industry. O.M. Scott & Sons focused on providing cost effective weed-free grass seeds to home gardeners. In 1928, O.M. Scott & Sons launched Turf Builder, the first fertilizer formulated specifically for lawns.

Beginning in the early 1990s, Scotts began an aggressive expansion campaign to diversify within the lawn and garden industry and gain market share, both domestically and internationally. In November 1992, the company purchased Republic Tool & Manufacturing Corp. of Carlsbad, CA. At the end of 1993, Scotts bought Grace/Sierra Horticultural Products of Milpitas, CA, another leading supplier of consumer and professional horticultural and turf-care products, which gave the company a worldwide presence.

Scotts' most important acquisition took place in 1995. Through an exchange of \$195 million worth of equity, the company purchased Stern's Miracle-Gro Products Inc., a company which had been formed in Long Island, NY, by Horace Hagedorn and Otto Stern in 1951. The merger companies continued to be headquartered in Ohio.

The Scotts Company Ltd. (United Kingdom) was formed through the partial acquisition of Miracle Garden Care in 1996 and Levington Horticulture at the end of 1997. The head office of the U.K. Consumer Business Group is in Godalming, Surrey, and the head office of the U.K. Professional Business Group is in Bramford, near Ipswich, Suffolk. In 1997, the remaining interest in Miracle Garden Care was acquired.

The same year, Scotts acquired a minority interest (24%) in Emerald Green Lawns, a lawn-service company serving Midwest markets, and announced that it would be the base for establishing the new Scotts LawnService. Later, in October 1998, Scotts increased its equity to 84% in Emerald Green Lawns, and repositioned the business into the premium lawn and garden service segment. The business was renamed Scotts LawnService in 1999. Also in 1997, Scotts acquired an 80% interest in Sanford Scientific, which develops genetically engineered plants.

In 1998, Scotts began a series of international acquisitions in Europe. The company acquired Rhone-Poulenc Jardin (RPJ), the leading consumer lawn and garden business in France, Germany, Benelux, Austria, Italy, and Spain. The same year they acquired the ASEF consumer business, based in the Netherlands and Belgium. In 1998, Scotts also acquired Shamrock brand of U.K. and Irish peat products from Bord na Mona, Ireland which gave Scotts access to peat reserves and opportunity to supply Shamrock products in the European markets.

In 1998, in the United States, Scotts acquired the organics company EarthGro, Inc., the Northeast region's leading organic company. This acquisition strengthened the company's services to mass retailers, home centers, and independents in the Northeast region.

In fiscal 1999, the company acquired the Ortho brand from Monsanto, and exclusive rights to market and distribute the consumer Roundup product line to the lawn and garden market in the United States, the United Kingdom, and other selected countries. Monsanto continues to own the consumer Roundup business and provides significant input related to the marketing and sale of its brand. The Ortho acquisition and consumer Roundup agreement added industry-leading pesticides and herbicides to the company's product portfolio. The acquired product lines also included the Weed-B-Gon, Rose Pride, and Home Defense product lines in the United States; Green Cross, the leading consumer pesticide line in Canada; and the Defender line in Australia. Scotts re-negotiated its marketing agreement with Monsanto in 2015 (see section below).

The company continued to grow its North American and European presence, while at the same time shedding its less profitable product lines. In 2000, the company sold the professional turf business to The Andersons Inc. and Nu-Gro Corp. for sales in the United States and Canada, respectively. Scotts kept its professional horticulture business. Also in 2000, the company gained worldwide distribution rights to the Shamrock Peat brand and bought the Substral fertilizer and plant care products from Henkel Group.

President and COO, James Hagedorn was named CEO in 2001, and he continues in this position today. He assumed the additional role of chairman in 2003. In the fall of 2004, Scotts ventured into the gardening retail market with the acquisition of Smith & Hawken, paying \$72 million for the high-end gardening retail chain. Horace Hagedorn died in early 2005. The Scotts Company changed its name to The Scotts Miracle-Gro Company in 2005. This name change was an effort to raise the profile of its consumer products business among investors.

In 2005, Scotts Miracle-Gro acquired the Rod McLellan Company, a maker of potting and gardening soil in the western United States, for about \$20 million. Also in 2005, it spent \$77 million to acquire Gutwein, whose line of Bird Song wild bird seed gave Scotts a foothold in a new market.

Scotts Miracle-Gro made two acquisitions in 2006 to strengthen its position in the global turfgrass seed industry. In May, it acquired certain brands and assets of Turf-Seed, Inc. The grass varieties are distributed throughout the European Union and other countries in the region. The June acquisition of selected brands and assets from Landmark Seed Company was complementary to the acquisition of Turf-Seed, Inc.

In March 2011, Israel Chemicals Ltd, an Israeli multinational fertilizer and specialty chemicals company, announced that they had completed the purchase of the Global Professional business segment from Scotts. The acquisition included the line of branded products including Osmocote, Sierrablend, and Peters Professional; a large sales and marketing force; R&D resources; as well as several factories and peat mines located in Holland, the U.K. and the U.S. The purchase price was \$270 million.

In October 2013, Scotts Miracle-Gro entered into an agreement with Bell Laboratories, the leading rodent control technology manufacturer to acquire Tomcat consumer rodent control business. The acquisition comprises the Tomcat brand, as well as a long-term partnership to bring advanced technologies to the consumer rodent control market. Tomcat complements the existing control business of Scotts Miracle-Gro.

In January 2015, Scotts acquired the assets of Action Pest Control, one of the major residential pest control providers in the Midwestern U.S. The acquisition is in-line with the Scotts long-term growth strategy.

On March 30, 2015, the Company acquired the assets of General Hydroponics and Vermicrop for \$120.0 million and \$15.0 million, respectively. The Vermicrop purchase price was paid in common shares of Scotts Miracle-Gro ("Common Shares") based on the average share price at the time of payment. This transaction provides the Company's Other segment with an additional entry in the indoor and urban gardening category, which is a part of the Company's long-term growth strategy. General Hydroponics and Vermicrop are leading producers of liquid plant food products, growing media and accessories for hydroponic gardening.

On October 3, 2016, the Company, through its subsidiary The Hawthorne Gardening Company, completed the acquisition of American Agritech, L.L.C., d/b/a Botanicare, an Arizona-based leading producer of plant nutrients, plant supplements and growing systems used for hydroponic gardening for an estimated purchase price of \$90.0 million.

In March 2016, Scotts Miracle-Gro introduced Connected Yard platform tied to a software platform called Gro. Through this platform, the company aims at giving advice to the gardeners on how to succeed in having healthy lawns and gardens. The launch partners of this platform include Blossom, Green IQ and Lono, and soil sensor companies PlantLink and Parrot.

In April 2016, Scotts eliminated neonicotinoids from all its outdoor products. Ortho, is among the leading brand of insect control products for lawn and garden use. The company began its efforts to eliminate neonicotinoid-based pesticides from the product for outdoor use. Scotts took this decision after carefully considering the harmful effects to honey bees and other pollinators.

Roundup marketing agreement with Monsanto

On May 15, 2015, Scotts amended its Marketing Agreement with Monsanto and entered into a lawn and garden brand extension agreement, and a commercialization and technology agreement with Monsanto. Scotts paid Monsanto \$300.0 million in consideration for these agreements on August 14, 2015, using borrowings under their credit facility. These agreements provided Scotts with the following significant rights:

- The ability to extend the Roundup® brand globally into other categories of lawn and garden beyond non-selective weed control;
- The opportunity to introduce the consumer Roundup® brand into territories not included in the original Marketing Agreement, including China and Latin America. Only Japan and countries with U.S. trade embargoes are excluded from the Marketing Agreement;
- The opportunity to propose changes to product formulations if deemed necessary to grow and/or protect the Roundup® brand; 5
- A right of first offer and a right of last look in the event Monsanto were to sell the consumer Roundup business and a credit to the purchase price in an amount equal to the then applicable termination fee in the event we make a bid in connection with such a sale;
- A “first look” related to Monsanto’s innovation pipeline that would provide Scotts Miracle-Gro with access to new technology and products that may be commercialized in the residential lawn and garden marketplace;
- The enhancements of Scotts rights in connection with the termination of the Marketing Agreement, including increasing the termination fee payable thereunder, eliminating certain of Monsanto’s termination rights and delaying the effectiveness of a termination in connection with a change of control of Monsanto or a sale of the consumer Roundup® business for five years after the notice of termination; and
- The expanded ability for Scotts to transfer, and thereby monetize, their rights as marketing agent to a third party (1) with respect to (a) the North America territories and (b) one or more other included markets for up to three other assignments and (2) in connection with a change of control of Scotts Miracle-Gro.

BUSINESS STRATEGY AND OBJECTIVES

Scotts Miracle-Gro positions itself as a lawn and garden company that helps consumers succeed. The company’s vision is to be the world leader in the consumer lawn and garden industry, and it has made great strides to fulfill this vision. Scotts Miracle-Gro leverages the strength of its brands as well as its merchandising and supply chain expertise for growth. Through acquisitions and internal product line extensions, Scotts Miracle-Gro has become the market leader in each of its major consumer lawn and garden categories in North America, France, the United Kingdom, and Germany.

In 2003, the company was reorganized into four reporting segments: North American Consumer, Scotts LawnService, Global Professional, and International Consumer. The company's major goals at that time were to further sales and market share growth in the International Consumer business; grow Scotts LawnService, a high-margin operation; and expand into new lawn and garden categories. The multi-year International Growth and Integration Plan was initiated in 2002. This pan-European enterprise resource planning system, combined with rationalization of the manufacturing operations, provided a more competitive advantage and enhanced profitability.

In 2009, the business segments were adjusted into Global Consumer, Global Professional, Scotts LawnService and Corporate & Other (primarily Smith & Hawken). Towards the end of 2009, Scotts announced its intention to cease operations of the Smith & Hawken business. All Smith & Hawken stores were closed.

With the sale of the Global Professional business in 2011, the company divided into two reportable segments: Global Consumer, and Scotts LawnService. In the Global Consumer segment, the company manufactures and markets consumer lawn and garden products in the categories: Lawn Care, Gardening and Landscape, and Home Protection. The Scotts LawnService segment provides residential and commercial lawn care, tree and shrub care, and limited pest control services in the United States.

Currently, the company operates through three reportable segments, namely, U.S. Consumer, Europe Consumer, and Other. These segments are different from the prior ones due to change in internal organization structure.

The company's research and development efforts address improvement of existing products, development of new products, as well as potential changes in manufacturing, packaging, and delivery systems. Scotts Miracle-Gro holds an 80% interest in Sanford Scientific, a research-oriented company that specializes in genetic engineering of plants.

SALES AND PROFITS

Scotts was a privately held company until January 31, 1992, when the company made a successful initial public offering of its stock. Scotts is currently publicly owned. Scotts entered the international market with the acquisitions of the Grace Sierra and Miracle Garden Care lines and has continued to make several European acquisitions. International sales represent approximately 18.4% of total sales in 2016.

Table 9-58: The Scotts Miracle-Gro Company's Corporate Sales, 2012 to 2016

Year-a	\$ Million		
	Net sales	Net income	Gross profit
2012	2,524.7	106.5	830.2
2013	2,515.9	161.1	843.6
2014	2,578.3	166.5	890.1
2015	2,728.0	159.8	908.0
2016	2,836.1	314.8	995.4

a- Fiscal year ending September 30.

Table 9-59: The Scotts Miracle-Gro Company's Sales by Business Segment, 2016

Business segment	\$ Million	% Of total
U.S. Consumer	2,187.4	77.1
Europe Consumer	274.2	9.7
Other	374.5	13.2
Total	2,836.1	100.0

U.S. sales of consumer lawn and garden products in 2016 account for an estimated \$2,187.4 million, or 77% of overall sales. This includes soil amendments, mulches, lawn spreaders and other products that are not covered in this report.

CONSUMER PESTICIDES AND FERTILIZERS

The Scotts Company is credited by most of today's industry players with creating the consumer lawn fertilizer market. The company introduced the first home lawn fertilizer, Scotts Turf Builder, in 1928, and the first selective weed control and fertilizer combination product in 1947. Scotts continued its growth in the lawn and garden market with its 1988 acquisition of Hyponex, the largest U.S. supplier of bagged soils and bark. Hyponex was the only supplier with a nationally recognized brand of such products. In 1995, Scotts acquired Stern's Miracle-Gro, the leader in garden fertilizers with a focus primarily on controlled release formulations. To assume the leading role in all lawn and garden categories, Scotts obtained global marketing rights to Roundup in 1998 and acquired the leading consumer lawn and garden pesticide brand, Ortho, in 1999.

The products and activities of the key U.S. Consumer business segment are described below.

U.S. Consumer

In the U.S. Consumer segment, Scotts manufactures and markets consumer lawn and garden products.

The company provides fertilizer products under the Scotts and Turf Builder brand names. The category has grass seed products under the brands: Scotts, Turf Builder, EZ Seed, Water Smart, and PatchMaster. It has lawn-related weed, pest and disease control products primarily under the Ortho, Scotts, and Lawn Pro brand names including sub-brands such as EverGreen, Fertiligène, Substral, Halts, Step, Weedol, KB and Celaflor. The Lawn Care category also includes spreaders and other durables under the Scotts brand name, including the Turf Builder Edgeguard Spreaders, Snap spreaders, Accugreen drop spreaders, and Handy Green II handheld spreaders.

The lawncare and garden categories of Scotts aims to help consumers grow and nurture flower and vegetable gardens and beautify landscaped areas. This category includes a complete line of water soluble plant foods under the Miracle-Gro brand sub-brands such as LiquaFeed; continuous-release plant foods under the Osmocote and Shake 'N Feed brand names; potting mixes and garden soils under the Miracle-Gro, Scotts, Hyponex, Earthgro, and Supersoil brand names. The category has mulch and decorative groundcover products under the Scotts brand including the sub-brand Nature Scapes; landscape weed protection products under the Ortho brand; plant-related pest and disease control products under the Ortho brand; wild bird food and bird feeder products under the Scotts Songbird Selections, Morning Song, and Country Pride brand names; and organic garden products under the Miracle-Gro Organic Choice, Scotts, and Whitney Farms brand names. Similar products are marketed internationally under the brand names: Miracle-Gro, Fertiligène, Substral, KB, Celaflor, Scotts, Morning Melodies, Scotts EcoSense, Fertiligène Naturen, Substral Naturen, KB Naturen, and Miracle-Gro Organic Choice.

Scotts Miracle-Gro focuses on helping consumers protect their homes from pests and maintain external home areas. The insect and rodenticide products are marketed under the Ortho brand name, including insect control products under the Ortho Max and Bug-B-Gon Max sub-brands and rodenticides under the Home Defense Max and Tomcat brands. The category's weed control products for hard surfaces are marketed under Ortho brand name, and non-selective weed control products under the Roundup brand name. These products are internationally marketed under the brands: Nexa Lotte, Fertiligène, KB, Home Defence, Weedol, and Roundup.

Table 9-60: Scotts Miracle-Gro's Estimated U.S. Sales OF Pesticides and Related Products to Consumer Markets by Product Category, 2016

Product category	\$ Thousand	% Of total
FERTILIZERS		
Lawn	672,150	30.7
Garden	225,493	10.3
Houseplant	55,253	2.5
Total	952,896	43.6
BAGGED SOILS		
Topsoil	134,430	6.1
Potting soil	210,607	9.6
Total	345,037	15.8
INSECTICIDES		
Outdoor	206,291	9.4
Indoor (houseplant)	62,734	2.9
Total	269,025	12.3
AMENDMENTS/MULCHES		
Peat	118,911	5.4
Lime	35,329	1.6
Bagged bark	17,165	0.8
Perlite/vermiculite	4,481	0.2
Other-a	2,241	0.1
Total	178,127	8.1
HERBICIDES		
Lawn	73,177	3.3
Garden/Nonselective-b	22,464	1.0
Total	95,641	4.4
FUNGICIDES	24,646	1.1
RODENTICIDES-d	32,579	1.5
OTHER-c	289,449	13.2
TOTAL	2,187,400	100.0

a- Includes limestone, gypsum, sand, charcoal, and other products.

b- Excludes Roundup sales that had previously been reported. Roundup is now on an agency agreement, and Scotts receives a commission on sales.

c- Includes U.S. grass seed, lawn spreaders and all Canada consumer sales.

d-Tomcat rodenticide business acquired from Bell Labs in October 2013.

MARKETING POLICIES

Scotts Miracle-Gro believes that consumers need the lawn and garden-care advice that they previously obtained from smaller retailers and nurseries. Through advertising support and promotion, they are trying to fill this gap by educating consumers about the need to apply lawn fertilizer more often, the advantages of garden fertilizers, and how to deal with all types of pest control.

The company has undertaken several strategic initiatives to provide improved service and to strengthen relationships with customers and while at the same time enhancing the company's profitability. Strong relationships with key retailers are important in Scotts Miracle-Gro's business strategy, and they are reflected in the company's marketing approach. Scotts Miracle-Gro established business development teams at each of its four largest customers to work with their buyers and supply chain management teams, thereby maximizing mutually beneficial sales opportunities.

In place since 1999, the marketing agreement for Roundup, Scotts Miracle-Gro and Monsanto are jointly responsible for developing global consumer and trade marketing programs for consumer formulations of Roundup. Scotts Miracle-Gro has responsibility for sales support, merchandising, distribution, and logistics for Roundup. Monsanto continues to own the consumer Roundup business and provides significant oversight of its brand. In addition, Monsanto continues to own and operate the agricultural Roundup business.

On May 21, 2015, a new agreement between Scotts and Monsanto was agreed upon. Under the new agreement, Scotts will have a much greater role in managing the Roundup brand, including the option to look at alternative formulations under the Roundup brand, sell to other countries, and even sell under the Roundup brand into the lawncare business.

As part of the amended agreement, Scotts Miracle-Gro will pay Monsanto \$300 million for these amendments to the current Agency Agreement, the Roundup brand extension opportunities, and the new joint technology agreements.

Under the existing agreement, Scotts Miracle-Gro is compensated under the marketing agreement based on the success of the consumer Roundup business in the markets covered by the agreement. Scotts Miracle-Gro receives a graduated commission to the extent that the earnings before interest and taxes of the consumer Roundup business in the included markets exceed specified thresholds. Regardless of these earnings, Scotts Miracle-Gro is required to make an annual contribution payment against the overall expenses of the Roundup business..For fiscal 2006, and until 2018, or the earlier termination of the agreement, the minimum annual contribution payment will be \$20 million.

If Monsanto terminates the marketing agreement upon a change of control of Monsanto or the sale of the consumer Roundup business, Scotts Miracle-Gro will be entitled to a termination fee that varies by program year. The termination fee is calculated as a percentage of the value of the Roundup business exceeding a certain threshold, but in no event will the termination fee be less than \$16 million or in excess of \$100 million. Monsanto may also be able to terminate the marketing agreement within a given region, including North America, without paying a termination fee if unit volume sales to consumers in that region decline: (1) over a cumulative three-fiscal-year period; or (2) by more than 5% for each of two consecutive years.

Scotts Miracle-Gro sells its products through a wide variety of retailers including home centers, mass merchandisers, warehouse clubs, large hardware chains, independent hardware stores, nurseries, garden centers, and food and drug stores. In the U.S., the company operates regional sales and marketing offices in the North, the Southeast, the Southwest and the West. The regional offices focus on understanding and meeting the needs of the local consumers, and increasing their participation rate in the lawn and garden activities. The headquarters in Marysville, OH supports the regional offices with programs and services designed to attract more consumers, enhance support to retailers, and drive innovation in products, services, programs and operations to accelerate the category growth.

Scotts product development and marketing efforts are largely focused on innovation and differentiation of products, and continuously increasing brand and product awareness to inspire consumers and create retail demand. Relationship with the retailers is an important marketing strength of Scotts Miracle-Gro. The company runs cooperative advertising programs with the retailers, offering in-store promotional allowances and rebates based on sales volumes. Scott provides training as well as educational and promotional support to independent retailers. The company also monitors consumer buying habits at the retail level and shares these trends with its retailers to be able to adjust product mix that is in-season. Scotts Miracle-Gro aligned its internal data systems with those of its retailers, so the company is therefore better able to track sales, spot changes in sales trends, and refill inventory.

Scotts Miracle-Gro relies heavily on advertising to influence the consumer decision making of lawn and garden products. Scotts Miracle-Gro spends approximately 4-5% of annual net sales on advertising to support and promote products and brands. The company is expected to have a similar commitment to advertising and marketing investment in the future. In the U.S., four out of five advertisement messages for lawn and garden products come from Scotts Miracle-Gro, helping the company be the favored player in the lawn and garden retail market. The company continually explores new and innovative ways to communicate with the consumers.

The company invests substantial resources in advertising, consumer promotions and other marketing activities in order to maintain, extend and expand the brand image. Scotts Miracle-Gro advertises its branded products through national and regional media and through cooperative advertising with retailers. Retailers are also offered preseason stocking and in-store promotional allowances. Certain products are also promoted with direct consumer rebate programs.

In addition to advertising and in-store sales support, Scotts Miracle-Gro uses a variety of other promotional tools. The company offers sales incentives through various programs, consisting principally of volume rebates, cooperative advertising, consumer coupons and other trade programs.

The company's national toll-free consumer helpline is staffed by "lawn and garden consultants," many of who are Scotts retirees with agronomic training and an average of 20 years of experience with the company. The customer service consultants have access to a computerized database of turf, weed, and related information organized by zip codes, which enables them to respond appropriately to calls from different regions. This service has been a tremendous success for the company and has been expanded to the Internet. The company's website provides an alternative to the telephone helpline, and consumers can get product information and gardening tips for their specific geographic area at www.scotts.com.

The number of lawn owners who want to maintain their lawns and gardens, but do not want to do it themselves represents a significant portion of the total market. Scotts recognized that its portfolio of well-known brands provides a unique ability to extend its business into lawn and garden services, and the strength and recognizability of its brands provides a significant competitive advantage in acquiring new customers.

The next major step in the company's strategy will be to focus on marketing and advertising plans. The company intends to launch new campaigns, have improved in-store communications, and also focus on the use of social media for advertising. The company is also putting in place improved analytical programs to assess the effectiveness of the marketing efforts and help make improvements. The long term focus of the increased marketing efforts to increase consumer engagement with the company brands and services.

ADVERTISING

Scotts advertising expenditures are spent on three main brands; Miracle Gro, Ortho, and Scotts were \$41.6 million in 2016. The majority of the advertising expenditures were for the the Scotts brand which amounted to \$24.7 million. Cable TV ads were the most popular advertising methods for the Scotts brand totaling \$16.0 million. The Miracle-Gro brand had the second highest expenditure, totaling \$10.7 million in 2016. The Ortho brand had total expenditures of \$6.2 million with cable TV accounting for \$4.7 million of the total.

FACILITIES

The corporate headquarters located in Marysville, OH, own or lease around 750 acres of facility. In addition to the manufacturing, distribution, and R&D facilities in Marysville, the company leases office space for sales, marketing and general operating activities, as well as warehouse space throughout North America and continental Europe as needed.

The Global Consumer business segment in North America uses the company's headquarters; two research facilities located in Apopka, FL, and Gervais, OR; and production facilities in Pearl, MS and Fort Madison, IA. The company leases a spreader and durable components manufacturing facility in Temecula, CA. In addition, Scotts Global Consumer business operates 29 stand-alone growing media facilities in North America, 24 of which are owned by the company and five of which are leased. Most of these facilities include production lines, warehouses, offices and field processing areas. The company also leases a fertilizer and growing media manufacturing facility and distribution center in Orrville, OH. The company owns four production facilities for the wild bird food operations in Indiana, South Dakota, South Carolina and Texas. It owns a grass seed blending and bagging facility in Albany, OR. The North American Consumer Segment leases additional sales offices in Atlanta, GA, Troy, MI, Wilkesboro, NC, Rolling Meadows, IL, and Bentonville, AR. Scotts Miracle-Gro also maintains working relationships with extension personnel at several universities.

The company leases facilities for its international business in Ecully, France. It owns a blending and bagging facility for growing media in Hautmont, France and a plant in Bourth, France that is used for formulating, blending and packaging plant protection products. The company owns four manufacturing facilities in the U.K. at Howden (East Yorkshire), Hatfield (South Yorkshire), Gretna Green (Gretna) and Sutton Bridge (Spalding). It owns three peat extraction facilities in Scotland and leases land for peat extraction at two additional locations across the United Kingdom. The company leases research and development facilities in Morance (Rhône), France and Cobbitty (NSW), Australia, and owns a research and development facility in Levington (Ipswich), U.K.

Scotts employed approximately 5,100 full-time employees in 2016. During peak sales and production periods, the company employed approximately 6,500 employees, including seasonal and temporary labor.

OUTLOOK

Scotts Miracle-Gro's sales have increased from past two years. Scotts was named "Supplier of the Year" in the lawn and garden category by Home Depot and Walmart in the United States, and by B&Q in the United Kingdom, recognitions that will allow the company to further strengthen its existing supply agreements. The company also provides excellent service to independent retailers, thereby increasing their reliance on Scotts' diverse branded products. The company has comprehensive plans to continue growth in its various segments.

Scotts Miracle-Gro has reexamined its strategies in 2016 in light of the challenges faced in the last two years, and incorporated changes and adjustments to attain greater category growth and market share.

In the long-term, the company plans to target one-third of its operating cash flow for return to shareholders, including dividends, with the remaining two-thirds targeted to fund capital expenditures for organic as well as acquisitive growth.

Scotts Miracle-Gro's net sales are expected to grow at about 5.3% for the next five years.

Table 9-61: The Scotts Miracle-Gro's Outlook for Pesticides and Fertilizers, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	2,187.4	-
2021	2,765.5	5.3

SOUTHERN AGRICULTURAL INSECTICIDES

OVERVIEW

Southern Agricultural Insecticides, Inc., of Palmetto, FL, a family-owned and operated company, was founded in the 1930s by Hans Diem and incorporated in 1947. It is currently a formulator and distributor of agrochemicals and fertilizers in the southeastern United States. The company offers a line of garden supplies as well as commercial products for golf courses, nurseries, greenhouses, professional lawn care, and specialty agriculture.

Crop dusting by hand was the commonly used method of pesticide application in the 1930s. The dust blends included ingredients such as sulfur, copper, pyrethrin, and rotenone. In 1940s, the company started distributing and formulating new products that were developed by companies such as Bayer, Ciba, Dow and Dupont. Until 1970s, the major customers were vegetable farms and feed stores. In the 1980's the company expanded its business into supplying pesticides and fertilizers.

SALES AND PROFITS

Southern Agricultural is a privately held company and does not release financial information. Corporate sales were about \$55 million in 2016. Consumer sales account for about 20% of total sales, or \$11 million. Overall sales through distributors account for 80% of the sales and the remaining 10% are directly to nurseries, retail, and pest control companies. The company's focus is on the commercial golf course, nursery and lawn care markets. The company plans to expand in the selection of products for the professional turf and ornamental customers.

CONSUMER PESTICIDES AND FERTILIZERS

Southern Agriculture's products include commercial products as well as contract packaging, lawn and garden products, and fertilizers. Branded products sold under the name of Southern Ag include formulations and packaging for many pesticides, soluble fertilizers, and nutritionals (minor elements).

The products offered under the commercial category include a wide range of herbicides, insecticides, miticides, granular fertilizers, liquid fertilizers, fire and bait, wetting agent, plant growth regulators, water soluble fertilizers, and molluscicides, among others. Some of these products are sold under the lawn and garden division as well. The heart of its business is its sales representatives selling to retailers, golf courses, commercial ornamental producers, lawn care companies, and retail distributors.

The company's lawn and garden products include fungicides, insecticides, soluble fertilizers, herbicides, horticulture oil, and fertilizers, among others. Southern Agriculture also offers lawn and garden organic products such as Liquid Copper Fungicide, Dipel Dust, Natural Pyrethrin Concentrate, Wettable or Dusting Sulfur, Thuricide Bt Caterpillar Control Concentrate, Triple Action Neem Oil Concentrate, Stop Blossom-End Rot On Tomatoes, Parafine Horticultural Oil Concentrate, and Payback Fire Ant Bait With Spinosad.

Consumer pesticides and fertilizers constitute about 20% of the company's business, or \$11 million. Southern Agricultural has increased its production capacity in recent years. A significant part of the business is toll manufacturing and formulation of commercial products. There is almost an even split of consumer pesticides and fertilizers. Miscellaneous includes nutritionals, adjuvants, wetting agents, etc.

Table 9-62: Southern Agricultural's Sales by Product Category, 2016

Product category	\$ Million	% Of total
Agrochemicals	38.5	70.0
Contract packaging	5.5	10.0
Total Commercial	44.0	80.0
Consumer lawn and garden pesticides	7.7	14.0
Consumer fertilizers and miscellaneous	3.3	6.0
Total consumer	11.0	20.0
Total	55.0	100.0

Table 9-63: Southern Agricultural Insecticides' Estimated U.S. Sales of Pesticides and Related Products to Consumer Markets by Product Category, 2016

Product category	\$ Million	% Of total
Lawn fertilizers	2.3	21
Outdoor insecticides and baits	3.1	28
Lawn herbicides	1.4	12
Garden herbicides	1.1	10
Fungicides	2.2	20
Miscellaneous	0.9	8
Total	11.0	100

MARKETING POLICIES

Southern Agriculture markets its products to the southern and central United States, using in-house staff of salesmen and lawn and garden distributors. Puerto Rico and other Caribbean countries account for a significant part of its market share. The company delivers products in selected areas of Florida, Georgia, Tennessee, and Carolinas by equipped trucks.

ADVERTISING

Southern Agriculture had about \$56,000 of TME for 2016. The company does not invest huge amounts in advertising of products. It manages its promotions through in house resources than agents. The company advertises primarily through lawn and garden magazines, trade publications, trade shows, and direct mail to lawn and garden stores.

Moreover, the company's website provides detailed information about its consumer products. It also provides product specimen labels and MSDS for individual products.

FACILITIES

The company is headquartered in Palmetto, FL. It has facilities in Boone and Hendersonville. All three locations are set up for office use, formulation, warehousing, and distribution.

OUTLOOK

Southern Agriculture continues to offer a wide variety of products to commercial, lawn and garden, and agricultural users. The company has been focusing on delivering products that meet the environmental requirements as well. The company's consumer sales are forecast to maintain stable growth at 2.0% per year until 2021.

Table 9-64: Southern Agriculture's Outlook for Pesticides and Fertilizers, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	11.0	-
2021	12.1	2.0

SPECTRUM BRANDS

OVERVIEW

Spectrum Brands (formerly Rayovac Corporation) is a global consumer products company and a leading supplier of batteries, lawn and garden care products, specialty pet supplies, shaving and grooming products, household insecticides, personal care products, insect repellents, and small household appliances. The company's products are available in more than one million stores in approximately 160 countries around the world, and it employs 15,700 people in 53 different countries. Spectrum Brands' global headquarters is located in Madison, WI and the U.S. Home and Garden Headquarters (United Industries) is located in Earth City, MO.

Spectrum continues to grow quickly by acquiring key players in specific markets, and became a strong player in the consumer pesticide and fertilizer market in 2005, when it purchased United Industries Corporation. United Industries was the leading manufacturer and marketer of value-priced consumer products for lawn and garden care, and insect control in the United States. Founded in 1969 by David Pratt, the company used both acquisitions and internal growth to become the leading supplier to the U.S. lawn and garden market.

Although initially focused on metal works, specifically anchor and bolt production, Spectrum formed Chemisco in 1973 from the acquisition of Spray Chem, a contract manufacturer of liquid and aerosol insecticides and herbicides. In 1985, United Industries acquired Real-Kill, and in 1988, it acquired various brands of Chesebrough-Ponds, a division of Unilever USA. These brands included Spectracide, Hot Shot, Rid-A-Bug, and No-Pest. In 1997, the Real-Kill and No-Pest lines were re-launched as the opening price point brands for Home Depot and Lowe's, respectively, two of United Industries' largest customers.

In 1994, United Industries purchased the Cutter line of insect repellents from Bayer AG's subsidiary, Miles, Inc. The Alljack Corporation and Celex Company were acquired a year later and included an exclusive license from the Scotts Company to use the Peters brand name (previously sold through Scotts) as well as the manufacturing portion of Kmart's opening price point brands: Kgro and Krid. In 2001, the company acquired the Sta-Green, Vigoro, and Bandini fertilizer brands from Pursell Industries, Inc., as well as the rights to the Best brand fertilizer. In 2002, United Industries bought Schultz Company, a garden products company with a line of liquid- and water-soluble plant foods including the All-Purpose Liquid Plant Food and Garden Safe pest control products.

In 2004, United Industries acquired Nu-Gro, Canada's leading marketer of consumer and commercial lawn and garden products. Nu-Gro sold fertilizer, pest control, and horticultural products through its subsidiaries in Canada and the United States. The company also produces and distributes controlled release nitrogen raw materials to the fertilizer industry worldwide. Key brands for Nu-Gro are CIL, Wilson, Vigoro, Pickseed, So-Green, Plant-Prod, Greenleaf, and Green Earth, several of which are sold by Nu-Gro under license from the brand owner. In 2005, however, Spectrum divested certain fertilizer technology and the Canadian professional products business acquired from Nu-Gro to Agrium, a leading agricultural retailer and producer and marketer of agricultural nutrients and industrial products.

Spectrum has also used acquisitions to build its battery business. In 2004, the company acquired Ningbo, a manufacturer of alkaline and zinc carbon batteries for retail, OEM, and private label customers; and Microlite, a Brazilian battery maker.

The following year, Spectrum acquired Jungle Labs, a leading manufacturer of premium water and fish care products, including water conditioners, plant and fish foods, fish medications and other products. In 2005, Spectrum Brands purchased 8 in 1 Pet Products, expanding their business into the pet products area. 8 in 1 Pet Products has been around for more than 100 years and sells under the brands 8 in 1, St. Aubrey Laboratories, Shaw's Pet Product, and others.

In 2005, the first phase of the integration of United Industries with Spectrum was completed with the combination of United's Consumer Home & Garden group with Spectrum's North American business unit. The two groups' sales management, field sales operations, and marketing teams were merged into a single North American sales and marketing organization reporting to Spectrum Brands' North American management team located in Madison, WI. United's finance, information services, customer service, and other administrative functions were combined with existing counterpart organizations in Madison, while legal and certain corporate accounting functions were combined directly into Spectrum Brands' global headquarters in Atlanta. United's Global Pet business unit, including the United Pet Group and Tetra, operates as a separate business unit headquartered in Cincinnati.

As it strategically acquires new business assets, Spectrum continues to divest non-core operations. In 2007, the company completed the sale of the Canadian division of its Home & Garden business segment, Nu-Gro, for \$45 million. The divestiture represents the remainder of the Nu-Gro business originally acquired in 2004 by United Industries.

Spectrum filed Chapter 11 protection in February 2009 and emerged in August of 2009. The debt restructuring resulting from the proceedings has allowed Spectrum to continue to grow in strength.

In June of 2010, Spectrum Brands merged with Russell Hobbs, Inc. adding a number of well known small household appliance brands, including Black and Decker, George Foreman, Littermaid, Farberware, and Toastmaster.

In November of 2011, Spectrum acquired household insecticides Black Flag and TAT from the Homax Group Inc. (part of the portfolio of Olympus Partners) and added their liquid, aerosol, and baits/traps lines to control ants, spiders, wasps, bedbugs, fleas, roach, fly and yellow jackets. The Black Flag consumer products line has four sub brands: Pesticide Free, Stinging Pests, Crawling Pests, and Flying Pests.

- Pesticide Free: Black Flag sold environmentally friendly products for the last few decades under this brand. These products contain no pesticides and no pesticide fumes or odors. They are designed for either indoor or outdoor use depending on the pest. The product line includes Roach Motel, Fly Motel Window Traps, Fly Motel Outdoor Trap, and Yellow Jacket Motel.
- Stinging Pest: Black Flag has a wide range of products to trap or kill pests like wasps, hornets, yellow jackets, and scorpions, both immediately and for the long term. The product line includes Wasp, Hornet & Yellow Jacket Killer (Aerosol), Foaming Wasp & Hornet Killer (Aerosol), Spider & Scorpion Killer2 (Aerosol), Mosquito, Fly & Gnat Killer; Commercial Wasp & Hornet Killer; Scorpion, Ant & Spider Killer; DryMax Indoor Fogger & Air Sanitizer; and Mosquito Spray & Mist.
- Crawling Pest: To control crawling insect infestations, Black Flag has products such as Ant & Roach Killing Chalk; Ant, Roach & Spider Killer – Unscented; Ant, Roach & Spider Killer – Fresh Pine Scent; Ant, Roach & Spider Killer – Spring Fresh Scent; Home Invading Ant & Spider Killer; Flea Ender Room and Pet Spray; and Extreme Home Insect Control Plus Germ Killer.
- Flying Pests: Products sold under these brands are for control of flying insects such as Mosquito, Fly & Gnat Killer, Backyard Fogger, Fly Stick, Fly Paper, Concentrated Fogger2 and Fly Window Traps.

Before being acquired by Spectrum, Homax had acquired Black Flag from the Fountainhead Group, in 2007. Homax acquired most of the Black Flag line, exclusive of the Black Flag foggers. The new product launches that were made since this acquisition include Fogging Insecticide, Extreme Home Insect Control, Extreme Flying Insect Killer, and Mosquito Candles.

Also purchased from the Homax Group is the TAT brand of consumer insect control products. There are ten items under the TAT line of products. The TAT line includes: TAT Wasp & Hornet Killer; TAT Flying Insect Killer; TAT Liquid Power Jet-Stream with Residual Action; TAT Fogger and TAT Fogger II; TAT Ant Trap and TAT Roach Trap; TAT Home Insect Control, and fly paper ribbon.

Currently, Spectrum has structured its operations into five reportable segments:

Global Batteries & Appliances, which consists of battery, shaving and grooming, personal care, small kitchen appliances, and portable lighting:

- Spectrum markets consumer batteries, including a full line of alkaline batteries which are marketed under the Rayovac, VARTA, and other third party labels. Additionally, we manufacture alkaline batteries for third parties who sell under their own private labels. We also offer a broad line of battery-powered portable lighting products including flashlights and lanterns under the Rayovac and VARTA brands, and other proprietary brand names pursuant to licensing arrangements with third parties. Spectrum also is a large marketer and distributor of hearing aid batteries and sell through retail channels as well as directly to professional audiologists. Specialty battery products include camera, lithium, silver oxide, keyless entry, and coin cell batteries.
- Personal care appliances include small kitchen appliances, electric shaving, nose and ear trimmers, grooming, styling devices, curling irons, skin appliances, and portable lighting.
- Small kitchen appliance brands include George Foreman, Black & Decker, Russell Hobbs, Farberware, Juiceman, Breadman and Toastmaster, including grills, bread makers, sandwich makers, kettles, toaster ovens, toasters, blenders, juicers, can openers, coffee grinders, coffee makers, electric knives, deep fryers, food choppers, food processors, hand mixers, rice cookers and steamers. Small home product appliances include irons, vacuum cleaners, air purifiers, clothes shavers, and others.

Hardware & Home Improvement division consists of 1) lockset products 2) plumbing products and 3) hardware products. Primary brand names for lockset products are Kwikset, Weiser, and Baldwin. Pfister provides innovative plumbing products. In hardware, Stanley is the main brand, and supplies hardware and tools for the architectural, industrial, consumer, and residential markets. The sales force of the HHI business is aligned by customer and geographic region. They sell primarily to large retailers, home improvement centers, hardware stores, non-retail distributors, home builders, commercial contractors, and other retailers.

Global Auto Care, offers products to wash and wax cars and prevent deposits. The brands offered in this category includes ArmorAll, STP and A/C Pro. Under ArmorAll, the product line includes wipes, tires, wheels, car wash, cleaners, leather, glass, air fresheners, and accessories. The products included under STP brand are fuel additives, oil additives, transmission treatments, motor oil, brake and power steering wheel, and other specialty products. The A/C Pro product line includes refrigerants, charging hose, leak sealer kit, and vent & duct cleaner.

Global Pet Supplies, offers products for fish, dogs, cats, birds, garden products, and other standard house pets. Approximately 44% of sales are for companion animal products, 36% are for aquatic pets, and 20% are for pet food. The brands that offer pet products include Tetra, Instant Ocean, Marineland, Nature's Miracle, Dingo, FURminator, Healthy Hide, Prosense, Litter Maid, Wild Harvest, Perfect Coat, Ecotrition, Birdola, Excel, Digesteeze, Spectracide, Hot Shot, Black Flag, Cutter, Repel, Garden Safe, Liquid Fence, and EcoLogic. The PET sales force is aligned by customer type, geographic region and product category, and they sell primarily to mass merchandisers, grocery stores and drug chains, pet superstores, independent pet stores, warehouse clubs and other specialty retailers.

Home and Garden division is key to this report in that it offers most of Spectrum's products that fall under the classification of consumer pesticides and fertilizers. Approximately 40% of sales of this division are for controls (insect and weed solutions), 32% are for household pest solutions, and 28% are for insect repellents. The sales force is geographically aligned with key customers, and they sell primarily to home improvement centers, mass merchandisers, dollar stores, hardware stores, home and garden distributors, and food and drug retailers. Spectrum lists primary competitors in this segment as The Scotts Miracle-Gro Company (Scotts, Ortho, Roundup, Miracle-Gro, Tomcat); Central Garden & Pet (AMDRO, Sevin); S.C. Johnson & Son, Inc. (Raid, OFF!); and Henkel AG & Co. KGaA (Combat).

The controls product category includes a variety of outdoor insect and weed control solutions, and animal repellents under the brand names Spectracide, Black Flag, Garden Safe, EcoLogic (made with naturally derived botanical oils) and Liquid Fence. Their line of outdoor control solutions are designed to assist in control of insects, weeds and animals when tackling lawn and landscaping DIY projects. Outdoor products are available as aerosols, granules, ready-to-use or hose-end ready-to-sprays.

The household product category includes household pest control solutions, such as spider and scorpion killers; roach and ant killers; flying insect killers; insect foggers; wasp and hornet killers; bedbug, flea and tick control products; and roach and ant baits. In addition, this group includes rodent traps and rodenticides. Key brands in the household insect control and rodenticide category are Hot Shot and Black Flag.

The repellents product category includes personal use pesticides for various outdoor nuisance pests, especially mosquitoes. Personal repellents are sold in a variety of formulas such as aerosols, lotions, pump sprays and wipes. Area repellents are sold as yard sprays, citronella candles, and patio lanterns. Brands in this category include Cutter and Repel.

SALES AND PROFITS

Spectrum Brands continues to grow since restructuring in 2009. This publicly traded company, which is a majority owned subsidiary of Harbinger Holding Company, reported net sales of \$5.0 billion for fiscal year 2016 (ending September 30th). This is an increase of over 7.4% from the previous year's revenues.

Table 9-65: Net Sales of Spectrum Brands by Business Unit, 2014 to 2016

	2014		2015		2016	
	\$ Million	% Of sales	\$ Million	% Of sales	\$ Million	% Of sales
Global Batteries and Appliances	2,215	50	1,876	45	2,016	40
Pet, Home & Garden	1,063	24	1,219	26	1,310	26
Hardware & Home Improvement	1,152	26	1,219	26	1,260	25
Global Auto Care	-	-	141	3	454	9
Total	4,429	100	4,690	100	5,040	100

CONSUMER PESTICIDES AND FERTILIZERS

The 2002 acquisition of Schultz provided a broad line of garden fertilizers and plant and potting soils. Schultz's water-soluble plant foods fit well with the company's water-based aerosol technology. Unlike oil-based aerosols, this technology allows for lower volatile organic compound (VOC) emissions to reduce air pollution, provide longer-lasting control and require no special warehousing. This has proven to be a plus in Spectrum's sell-in efforts to the trade. By providing convenience and ease of use with both ready-to-use formulations and hose-end sprayers for all its major herbicide, insecticide, fungicide, and fertilizer brands, Schultz's broad product line continues to experience growth. Introductions of insect, weed, and disease control products in 2004 further fueled growth in the line.

Product activity in 2005 included several new Home and Garden products including Hot Shot MaxAttrax Nest Destroyer Roach Bait, Hot Shot MaxAttax Ultra Roach Killing Gel, Peters All Purpose Liquid Plant Food and Tub, Peters Acid Loving Plant Food Tub, Peters Super Blossom Booster Liquid and Tub, Peters Strong-Start Liquid Plant Food and Spectracide Terminate Kit. Sta-Green also introduced a new line of Regional Selects Grass Seed that provides different regional grass seed blends that are made specifically for different parts of the country.

Spectrum Brands offers bug and weed control products under its EcoLogic brand. This line consists of environmental-friendly professional turf, landscape and agricultural products. EcoLogic bug and weed control products are natural substitutes to traditional pesticides. EcoLogic Bed Bug Killer Aerosol is composed of Lemongrass oil, Isopropyl alcohol, and Carbon dioxide. The other products include Ant & Roach Killer, Bed Bug Killer Aerosol, Flying Insect Killer, Home Insect Control, Weed & Grass Killer Ready-To-Use², Lawn & Yard Insect Killer Concentrate², and Lawn & Yard Insect Killer Granular².

The Ant & Roach Killer is composed of lemongrass oil and is used to kill spiders, crickets, and other insects. The Bed Bug Killer Aerosol is composed of lemongrass oil and kills bed bugs. It can be used on mattresses, bed frames, carpet edges, furniture, and suitcases. Flying Insect Killer is used to kill indoor flying insects such as mosquitoes and flies. Home Insect Control is made up of lemongrass oil and is used to kill ants, cockroaches, spiders, ticks, and other insects. Weed & Grass Killer Ready-to-Use² is composed of essential oils, rosemary, and cinnamon oils. It kills common weeds and grasses. Lawn & Yard Insect Killer Concentrate² is also composed of lemongrass and is used to kill ants, crickets, and other insects. It is sprayed on infested areas to kill the insects. Lawn & Yard Insect Killer Granular² is used to kill ants, fleas, ticks, and other insects. All of the EcoLogic products are safe to use around pets and children.

In 2006, the company launched Spectracide Once & Done! a fire ant killer for the consumer market. Previously available only through pest control agencies, the product contains the preventive and curative bait, indoxacarb. This bait attracts foraging worker ants, which carry the granules back to the colony. Within 48 hours, the entire colony and queen are dead; the product continues shielding the lawn from fire ants for up to four months. The following year, Spectrum introduced Hot Shot Liquid Ant Bait. This advanced liquid product kills the queen and colony within 24 hours. Also in 2007, Cutter introduced New Cutter Advanced Sport which offers longer-lasting protection in an aerosol form, incorporating Picardin as its active ingredient; the product was also launched in wipe form. Cutter has introduced a new line of repellents and outdoor sprays under the line Cutter Natural, based on natural oils such as eucalyptus and lemon.

In March 2017, Spectrum Brands- Pet, Home & Garden division introduced innovative products and marketing campaigns at the Global Pet Expo.

Table 9-66: Consumer Pesticide and Fertilizer Brands for Spectrum Brands, 2016

Category	Brands	Description
Lawn and garden insecticides and fungicides	Garden Safe, Spectracide	The line offers a wide variety of controls for flower, garden, and houseplant insects; fire ants; and other lawn pests, as well as traps. The Garden Safe products include sprays and soaps for control of fungus, snails, moss, and algae, and use agents that are environmentally friendly
Herbicides	Garden Safe, Spectracide	The line consists of liquid formulations for both selective and nonselective control
Household pesticides	Hot Shot, Spectracide	This category includes termite and other household insect killers, as well as rodent and moth controls. They are available in sprays, baits, foggers, granules, and powders
Repellents	Cutter, Repel	Offers sprays, lotions, gels, aerosols, towelettes, sticks, foggers, candles, coils, lanterns, and torches

As noted in the summary above, Spectrum Brands eliminated growing products (fertilizers, enriched soil, mulch, and grass seed) as well as all of the Canadian Home and Garden divisions in 2009. The control products remain, as well as selected plant food products, as seen below.

Table 9-67: Spectrum's Consumer Pesticide and Fertilizer Sales, 2016

Product category	\$ Thousand	% Of total
INSECTICIDES		
Household/pet	155,550	34
Outdoor	169,275	37
Repellents	43,175	9
Total	368,000	80
FERTILIZERS		
Lawn	9,150	2
Garden	4,575	1
Houseplant	4,575	1
Total	18,300	4
HERBICIDES		
Garden	9,150	2
Nonselective	36,600	8
Lawn	22,875	5
Total	68,625	15
FUNGICIDES	9,150	2
TOTAL	464,075	100

MARKETING POLICIES

Spectrum markets value-brand products, with approximately 90% of sales made on a direct-to-retail basis. Its household and other non-plant products are widely available in grocery stores, hardware stores, drugstores, home centers, wholesale clubs, garden centers, and other national chain outlets, but mass retailers including Home Depot, Kmart, Lowes, and Walmart account for three-quarters of sales. About 90% of its products are sold under its own brand names with the remainder private-labeled for other marketers. Sales to professionals are high, comprising about 30% of total sales, with sales to consumers accounting for the remaining 70%.

Spectrum's pesticide sales organization is comprised of the former United Industries national sales group and includes about 350 sales representatives, one of the largest in the industry.

ADVERTISING

Spectrum Brands had TME for their products in 2016 totaling approximately \$536,400, of which about 71% was spent for spot TV, and 29% for in store displays.

Table 9-68: Traceable Media Expenses Spectrum Brands 2016

\$ Thousand					
Brand	Syndicated TV	Spot TV	Radio	In store displays	Total
SPECTRACIDE					
Grass & Weed Killer	-	114.9	-	-	114.9
Bug Stop	-	265.7	-	-	265.7
Total	-	380.6	-	-	380.6
BLACK FLAG	-	-	-	92.8	92.8
HOT SHOT	-	-	-	60.7	60.7
CUTTER	-	-	-	2.3	2.3
TOTAL	-	380.6	-	155.8	536.4

Spectracide brands has TME of \$380,600 in 2016. The majority of the expenditure (\$265,700) was spent on Bug Stop (spot TV). Black Flag, Hot Shot and Cutter advertising made up the remaining advertising expenditures, and primarily funded in store displays.

FACILITIES

Spectrum Brands corporate headquarters relocated back to Madison, WI, in 2010. The U.S. Home and Garden Headquarters is in Earth City, MO, and the United Pet Group is in Cincinnati, OH. There are about 15,700 employees worldwide.

OUTLOOK

Spectrum's United Industries division continues to focus on expanding its product line offerings, through acquisition, and through emphasis on strength in its research and development unit. The company remains one of the dominant players in the U.S. consumer lawn and garden pesticide market, and continues to benefit from strong relationships with key national retailers including Walmart, Kmart, Home Depot, and Lowe's.

Stable growth in consumption of the pet, home and garden products should continue. For insecticides and repellents, growth in consumption is expected to increase due to growing awareness of mosquitoes as vectors of disease, bed bug infestation recognition, the continuing fire ant problem and awareness of diseases arising from deer ticks. Herbicide usage should grow as well as invasive weeds intrude more and more into home lawns and garden areas.

Based on average annual growth of 3% to 4%, excluding additional acquisitions, U.S. sales of Spectrum's consumer pesticides are projected to reach \$551.2 million in 2021, as shown below. This could be significantly increased by acquisitions of other companies or product lines, or decreased by divestitures, neither of which is included in this forecast.

Table 9-69: Spectrum's Outlook for Pesticides and Fertilizers, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	464.1	-
2021	551.2	3.5

ST. GABRIEL ORGANICS

OVERVIEW

St. Gabriel Organics is a privately held company located in Orange, VA. The Reuter family started the company in 1995 and continues to manage the business. Mary Reuter is president, Robert Reuter is vice president and general manager, and Ted Reuter is active as a director.

Prior to founding St. Gabriel, the Reuter family had started Reuter Laboratories in 1974. Reuter Laboratories, which had a line of consumer fertilizer and pesticide products, was sold in 1985 to a company that shortly thereafter went out of business.

SALES AND PROFITS

St. Gabriel Organics does not release financial information. Corporate sales are estimated at \$4.0 million in 2016.

CONSUMER PESTICIDES AND FERTILIZERS

Consumer products offered by the St. Gabriel Organics are offered under following categories:

- Garden Products
- Pet Supplements and Pet Care Products

St. Gabriel Organics no longer operates the fertilizers business. The insecticides business of the company is getting stronger with the addition of new organic insecticides.

In 2014, St. Gabriel Organics sold its BurnOut line of non-selective weed controls, based on a combination of natural ingredients including acetic acid and clove oil, to Bonide.

Table 9-70: St. Gabriel Organics Estimated U.S. Sales of Pesticides and Related Products to Consumer Markets by Product Category, 2016

Category	\$ Thousand	% Of total
INSECTICIDES		
Outdoor	2,600	65
Repellents	800	20
Total	3,400	85
HERBICIDES		
Selective	400	10
ALL OTHER-a	200	5
TOTAL	4,000	100
a- Includes farm and ranch products.		

Pet supplements and pet care products offered by the company include:

- GOODEARTH-FOOD GRADE DE is a natural source of minerals for dogs and cats. It is also used as an anti-caking agent in stored grains including bird food.
- URTHPET-DIGESTION HEALTH PROBIOTIC is helpful in creating defense against constipation, diarrhea, bloating, and gas. It contains active ingredients such as *Lactobacillus plantarum*, *Bacillus coagulans*, *Bacillus subtilis*, and *saccharomyces* that support the immune system and result in balanced digestive system.
- URTHPET-D-WORMER is a broad spectrum de-wormer that controls hookworms, roundworms, and tapeworms in cats, kittens, puppies, and dogs.
- URTHPET FLEA POWDER is applied on pets and pet areas to control ticks, fleas, and other crawling insects. It is also applied on pets to control fleas and ticks.
- URHTPET-FOOD GRADE DIATOMACEOUS EARTH is a food- grade product that contains natural source of minerals such as iron, calcium, and magnesium.
- URHTPET-HIP & JOINT PET HEALTH SUPPLEMENT is used to support bone health and cellular health of pets. It is used for 30 days, depending on the size of pet.
- URTHPET-OOPSEY POOPSEY! STEP #1 is a clean-up for pets that contains super-absorbent polymers that absorb and solidify liquid for easy disposal.
- URTHPET-OOPSEY POOPSEY! STEP #2 SPOT REMOVER cleans and deodorizes residual mess.
- URHTPET-URINARY TRACT HEALTH is made up of natural plant extracts for supporting inflammatory response and kidney health of the pets.

Garden products offered by the company include:

- HOLY-MOLEY- MOLE REPELLENT, IT'S ORGANIC! is used to repel moles by action, scent and taste. It is safe to be used in gardens as it is harmless to pets and humans.
- INSECT DUST-FLEA & TICK is based on diatomaceous earth and is marketed to control fleas, cockroaches, ants, millipedes, centipedes, and crickets. It can be used both indoors and outdoors to act as a barrier around patios, porches, and pools.
- INSECT DUST-DIATOMACEOUS EARTH is based on diatomaceous earth and is marketed to control ants, cockroaches, earwigs, and other crawling insects. It can be used around houses, patios, porches, and pools. It can also be used indoors in the kitchen, in corners, under carpets, below sinks, and other areas.
- LAWN & GARDEN DISPENSER TUBE is used to apply the Milky Spore Powder, Insect Dust and Fertilizers.
- MILKY SPORE GRANULAR is an organic Japanese beetle grub that is applied using a drop spreader for covering the entire yard. It is applied in spring and summer for long-lasting control.
- MILKY SPORE POWDER is applied on lawn to kill the grub stage of Japanese beetle. It is applied every four feet using a teaspoon or a lawn and garden dispenser. It is harmless to humans, animals, and the environment.

MARKETING POLICIES

Five company sales representatives and 25 manufacturer representative organizations market St. Gabriel Organics products nationally. Almost all of the sales are through distribution channels, with the exception of online and telephone sales to consumers. Products are primarily retailed through independent garden centers and hardware stores.

The company's online business is small but growing. Recently, the company's strategy has been to promote online sales, and in stores, identify new trademarks on all products. The company innovatively packages its products by using trademarks like "pet-approved brand" and "kitchen safe brand." On its website, dealers and distributors that are "pet-approved" are highlighted for consumers who consider this a priority in purchasing.

An easy-to-navigate website includes product descriptions, product labels, and MSDS safety sheets for dealers and consumers. The website emphasizes on every page, near its logo, that it sells "Natural Lawn & Garden Products."

ADVERTISING

St. Gabriel Organics had no TME for 2016. The company does its advertising on talk-radio garden shows as well as some cooperative advertising with its dealers and participates in trade shows.

Its consumer-friendly website facilitates the purchase of its products by providing lists of retail outlets in each state and by encouraging consumers to submit orders directly online or by calling a toll-free number. It allows consumers to also obtain the names of dealers that carry brands that are safe for pets. Pop-ups allow the consumer to selectively view the product packaging.

FACILITIES

St. Gabriel operates a manufacturing plant at its headquarters in Orange, VA. The company is also making efforts in research and development to launch more products in the pet products category. It has approximately 20 full-time employees, including management, and makes use of temporary help during peak production periods.

OUTLOOK

St. Gabriel Organics is forecast to grow as a supplier of specialty pest control products, and garden products to the homeowner. St. Gabriel expects to achieve continued growth with sales of its organic pet and garden products.

Table 9-71: St. Gabriel Organics Outlook for Pesticides, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	4.0	-
2021	4.5	2.5

SUMMIT CHEMICAL

OVERVIEW

Summit Chemical, Inc. was founded in 1959 by Lawrence Kase, a food technologist with a masters' degree in microbiology. He developed several insecticides which were marketed to food packaging companies. Summit subsequently expanded into supplying professional pest control products to food plants, government agencies, industry, and pest control companies.

Growth proceeded quickly after Summit Chemical entered the mosquito control business. In 1986, the company received a U.S. patent for a sustained-release biological product for mosquito control. Branded Summit Bti Briquets (*Bacillus thuringiensis* subspecies *israelensis*), the product kills mosquitoes in the larval stage, and was sold to mosquito control professionals and throughout the world. In 1990, Summit expanded distribution to the consumer market, introducing a product for homeowners called Mosquito Dunks. Three years later, the U.S. Department of Defense assigned Bti Briquets a National Stock Number to purchase the product and protect troops at home and abroad from mosquito-borne illness.

Recently, Summit Chemical has added some organic insecticides to its product line that includes the enviro-friendly Mosquito Dunks, Mosquito & Gnat Barriers and the OMRI listed Year-Round Spray Oils. Mosquito Combo Packs, however, are now discontinued by the company.

TOTAL SALES

The consumer and commercial businesses of Summit Chemical have witnessed an increase since 2014. Summit Chemical's sales are estimated at \$13.5 million in 2016. The remainder includes pond products, a new lawn fertilizer and contract manufactured products. About 67% of the company's sales of consumer insecticides are made through brokers, with 17 agencies representing the products of Summit Chemical around 1,600 retail stores in the United States. About one-third of the company's sales are provided directly to the mass merchandisers, retail stores, and online. Summit's insecticides are widely available at Ace Hardware, True Value, Sears, Lowe's, and Home Depot stores.

The company produces private-label products for other companies as well. Private-label products account for about 25% of the total sales for consumer insecticides and related products. About 75% of sales for consumer pesticides and related products are of the company branded products.

Table 9-72: Summit Chemical's Sales of Pesticides for Branded and Private-label Products, 2016

Product category	\$ Million	% Of total
Branded products	10.1	75
Private-label	2.4	25
Total	13.5	100

PRODUCTS

For the consumer market, Summit offers several mosquito control products. They include Mosquito Dunks, Mosquito Bits, and Mosquito Barriers. As noted above, Mosquito Combo Packs are now discontinued by the company. Available in 8 oz, 30 oz, 20 lb and combination packages with Mosquito Dunks, Mosquito Bits are sprinkled in standing water to kill even large mosquito populations and mosquito larvae within 24 hours. Mosquito Dunks are sustained release discs designed to float in a water garden. Each disc treats up to 100 square feet of surface water for one month. Mosquito Dunks are available in 2 and 6 unit packages; they are also sold attached to artificial water lilies to disguise the disc ("Hide-a-Dunk"). The company also offers Mosquito & Gnat Barrier in a hose-end spray bottle and Mosquito Repellent Coils. Summit's mosquito control products contain naled, pyrethrin, and/or permethrin.

For control of insects such as aphids, adelgids, certain caterpillars, leaf beetle larvae, scales, spider mites, and white fly, Summit offers Year-Round Horticultural Spray Oil in a variety of sizes. The product is designed for consumers to use throughout the year, and according to the company, can be used safely on all houseplants, garden plants, vegetables, and fruit trees up until the day of harvest as it contains no dangerous chemicals. This is an OMRI listed product which cements the company's claim of calling it an organic product.

Recently, Summit made a modification to their Horticultural Oil and have formulated ready-to-use (RTU) Spray Oils. These ready-to-use spray oils are pre-diluted for small use in the home and backyard and are approved for organic gardening. RTU is an alternative to concentrates that require mixing.

Summit also offers a range of pest control products that include Pyrethrin Fogging Concentrate, Mistocide Plus, and Mistocide B. Mistocide is a ready-to-use and oil-based insecticide, formulated for residential, industrial, and institutional purposes. It is used to control cockroaches, houseflies, mosquitoes, gnats, fleas, and other insects. Residual insecticides offered by the company include Permacide P Concentrate, Permacide PI, and Permacide P II. These residual insecticides are used as a wet spray to control numerous insects and are effective over a longer period. Permacide P I and Permacide P Concentrate are water-based formulations of permethrin. Permacide Plus and Super Permacide II are oil-based residual insecticides used to treat industrial and commercial sites.

The company also sells various pond care products that are offered under the Clear-Water brand. Clear-Water Barley Straw and Extract naturally decay in pond water, releasing enzymes that aid in maintaining water clarity. Summit also offers a variety of pond accessories such as artificial water lilies, lotus, and cattails. Products offered under this category include Clear-Water Barley Straw Bales, Clear-Water Barley Straw Extract, Clear-Water Barley Straw Flakes, Clear-Water Barley Straw Planters, Clear-Water Pond Clay Products, and Year-Round Spray Oils in Ready-to-Use Trigger Spray Bottles.

In 2006, Summit expanded into fertilizers with EZ Lawn Seeder, a 3-in-1 product that delivers grass seed, fertilizer and water in a single step. EZ Lawn Seeder attaches to any standard garden hose. The company also broadened its pond treatment line with the addition of three new barley straw planters in small, medium and large sizes. The planters float in a pond to clarify water and hold ornamental plants.

In 2012, Summit Chemical launched its Biological Caterpillar & Webworm Control, an eco-friendly caterpillar killer that targets caterpillars and webworms.

In 2014, the company introduced Summit Year-Round Spray, a horticulture oil that controls insects on plants. The spray is environmental-friendly and kills aphids, spider mites, thrips, fungus gnats, and caterpillars, among others.

For commercial and professional markets, Summit offers fogging insecticides, residual insecticides, space sprays and specialty insecticides. Its residual or long term insecticides leave an active residual film on treated surfaces that continues to kill insects for various periods of time.

Summit products are available nationally through a large number of distributors, as well as a variety of retail channels including hardware stores such as Ace, True Value, and Sears, and home centers such as Lowe's and Home Depot, in addition to nurseries and garden centers.

MARKETING POLICIES

Summit Chemical works closely with retailers to market its consumer products. The company also markets its products through product display stations that feature its Mosquito Bits brand, and Mosquito Dunks. The company also provides trade discounts. Summit Chemical has recently updated their website to make it more customer friendly. Summit has added a product locator feature that enables the consumer to see if the product they are looking for is offered in close proximity to their homes. Summit Chemical has 3,000 independent vendor locations across the country.

The company is a member of various associations, including the American Mosquito Control Association, Northeast Mosquito Control Association, Mid-Atlantic Mosquito Control Association, Virginia Mosquito Control Association, New Jersey Mosquito Control Association, North Carolina Mosquito Control Association, South Carolina Mosquito Control Association, International Sanitary Supply Association, and national Pest Management Association.

In February 2012, Amvac Chemical Corporation has acquired the manufacturing rights of Bti Briquets from Summit Chemical for the global professional mosquito larvicide market. As per the agreement, Summit Chemical will manufacture and provide Amvac Chemical with a pipeline of new larvicides based on Bti for the public health mosquito control market. This initiative is likely to benefit Summit with new product development and increased market penetration of its products as Amvac Chemical has a bigger customer base.

ADVERTISING

Summit Chemical creates ads to promote its consumer and professional line of products. The tag line used for its Mosquito Bits and Mosquito Dunks products is "It All Starts With a Mosquito Bite". The company has traceable media expenditures of \$148,900 in 2016 for its outdoor insecticide products. These expenditures were used to place magazine advertisements.

FACILITIES

Summit Chemical is headquartered in Baltimore, MD. In addition to producing its products under its own brand names, Summit has also contracted to fill, warehouse and distribute active ingredients. It provides private label products for other suppliers and offers contract manufacturing of insecticides, deodorants, insect repellents, shampoos, and herbicides. As per the company's agreement with Amvac, Summit provides Amvac with a range of products for mosquito control programs, globally. Amvac provides service to the professional public health market through its geographical reach and resources.

OUTLOOK

Through the forecast period, Summit will benefit from expected increases in the sales of mosquito control products and established distribution through a large network of national retailers. The agreement between Amvac and Summit will lead to increased market penetration and timely response to customers' needs. Through 2021, sales of the company's insecticides are expected to rise by 3.5% per year to reach \$16.0 million.

Table 9-73: Forecast U.S. Sales of Summit's Pesticides to Consumer Markets, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	13.5	-
2021	16.0	3.5

VIRBAC CORP.

OVERVIEW

Virbac Corp. of Fort Worth, TX, is a publicly held manufacturer and marketer of companion animal health products, focusing on dermatological, parasiticide, dental, and pet health products. Offering a broad range of products including older brands such as Allerderm, C.E.T., Preventic, and Francodex, as well as newer lines that have been acquired or developed in-house, the company is a major player in the veterinary products market, with a presence in 100 countries a veterinary laboratory ranked 9th worldwide. A subsidiary of Virbac S.A. of Carros Cedex, France, Virbac Corp. was formed on March 5, 1999, with the merger of Virbac, Inc., a wholly owned subsidiary of Virbac S.A., and Agri-Nutrition Group Ltd. In December 2005, Virbac S.A. announced that it would acquire the remaining 40% of Virbac Corp. that it did not already own.

Virbac S.A. was founded in 1968 by veterinary surgeon Dr. Pierre Richard Dick, and is ranked in the top 10 distributors of animal health products worldwide. The company entered the U.S. consumer market in 1982 with the purchase of Allerderm, a dermatological products company, and Carson Chemical Company, an insecticide manufacturer. Since then, both Virbac S.A. and Virbac Corp. have grown briskly, largely through a series of strategic mergers and acquisitions.

In 1999, Virbac Inc. merged with Agri-Nutrition, a company that specialized in pet health care products and was itself formed by the acquisitions of Zema, St. Jon, St. Jon Rx, and Mardel, all between 1995 and 1997. Also part of Agri-Nutrition was the former Purina Mills manufacturing facility, PM Resources (now Virbac-St. Louis), which produced private-label products in the animal health, pesticide, and specialty chemical markets.

In 2000, Virbac Corp. obtained over-the-counter (OTC) marketing rights to Pet Tabs from Pfizer. The same year, Virbac sublicensed the North American distribution rights for two equine products in development to Pfizer, and in 2003 received FDA approval to sell the products. The company also broadened its parasiticide portfolio beyond flea, tick and mite control to include several anthelmintics (dewormers). In 2001, Virbac launched Worm-X (pyrantel pamoate) canine dewormer in the consumer market; Iverhart Plus (ivermectin) canine heartworm preventative in the veterinary market; and Virbamec (ivermectin) pour-on cattle anthelmintics. In 2002, Virbac expanded its dermatological product lines with Allermyl Shampoo, a foaming micro-emulsion that relieves skin irritation and pruritus in dogs and cats. In addition, Virbac received FDA approval for Genesis, a topical spray for allergic dermatitis.

In 2003, Virbac continued to expand its veterinary business with the acquisition of Delmarva Laboratories and the animal health products of King Pharmaceuticals. Delmarva's products lines include Euthasol and Pentasol, two euthanasia products for companion animals, and Biomox amoxicillin, a broad-spectrum antibiotic. Products acquired from King include Soloxine, a canine thyroid hormone replacement drug; Pancrezyme, for pancreatic enzyme insufficiency in dogs; Tumil-K, a supplement for cats; and Uroeze and Ammonil, which are both urinary acidifiers to treat and prevent canine bladder stones and feline lower urinary tract inflammation.

In 2004, Virbac acquired the manufacturing rights to Leucogen, a feline leukemia virus vaccine, from Antigenics. Virbac had previously held the marketing rights to the product. The company also discontinued contract manufacturing of its livestock de-wormers as a result of competitive pricing that diminished product profitability.

Acquisitions continued in 2006, with the buyouts of GlaxoSmithKline's veterinary division in India and an Italian company specializing in antibiotics for pigs.

Virbac sold its consumer group to Sergeant's Pet Care Products in 2008. The products divested include proprietary pet care items: Internal and external health care products, dental solutions and an expansive aquatic line.

In 2008, Virbac acquired selected animal health products from Schering-Plough in Europe. These acquired veterinary drugs include: intra-mammaries and injectable anti-infectives, and endocrinology products. These products are used for food producing animals, mainly cattle.

In February 2010, Virbac closed an agreement with Pfizer Inc. to acquire some of its veterinary products, including a manufacturing facility, in Australia. Virbac acquired rights to Pfizer's portfolio of livestock products marketed in Australia by Fort Dodge Animal Health for use in farm animals, primarily cattle and sheep. The acquired portfolio achieved net sales of approximately 36 million Australian dollars in 2009 and includes parasiticides and vaccines, accounting for 80% and 20% of the sales, respectively.

In March 2010, Virbac announced a strategic alliance by taking 30% shareholding in Uruguayan laboratory Santa Elena, a 50-year old company producing food-producing animals vaccines, especially for bovine, which are marketed in Uruguay and Latin American countries. The company's revenues reached USD 7 million in 2009. Virbac has the option to acquire whole of the capital stock of Santa Elena in future.

In January 2011, Virbac acquired the veterinary assets of the Synthesis company in Colombia for \$9.6 million. The company generated revenue of about \$5 million in 2010 composed of 60% of bovine products and 40% of companion animal products.

In February 2011, Virbac acquired the distribution rights for Multimin injectable supplements for South Africa and neighboring countries from the Animalia company.

In March 2011, the European Commission awarded Virbac the European registration for the vaccine CaniLeish which was launched in May 2011 in the Portuguese market.

In May 2011, Virbac acquired the Australian company Peptech for 9.1 million Australian dollars, with which it signed a distribution contract for the contraceptive implant for dogs Suprelorin in 2007.

In October 2014, Virbac entered into an agreement with Eli Lilly and Company to acquire veterinary products that were earlier marketed by Novartis Animal Health. Under the agreement, Virbac acquired rights for the United States on trademarks, marketing, patents, and other assets related to Sentinel Flavor Tabs and Sentinel Spectrum, major parasiticides for dogs.

In March 2016, Virbac expanded its presence in the United States and Canada with a \$37.9 million expansion in Bridgeton. The expansion has helped the company in boosting its animal health business.

SALES AND PROFITS

In 2016, net sales for Virbac Group are reported at \$788.1 million. Sales of Sentinel, acquired by Virbac in late 2014, are estimated to reach nearly \$95 million in 2016. Virbac U.S. sales are estimated at \$106 million. The legacy business is declining, however, following disruption of the manufacturing and deliveries from its St. Louis facility (MO). This disruption is due to implementation of Quality System Improvement Plan which is submitted to the Food and Drug Administration (FDA).

Table 9-74: Virbac's Sales of Pesticides for Branded and Private-label Products, 2016

Type	\$ Million	% Of sales
Branded	98.7	93.1
Private label	7.3	6.9
Total	106.0	100.0

CONSUMER INSECTICIDES

Virbac's consumer insecticides offers a range of products that prevent heartworms, hookworms, and kill fleas, ticks, and mosquitoes. The products are offered under the brands Iverhart Plus, Iverhart Max, Effipro, Effitix, Knockout, Otomite Plus, Preventic, Sentinel, and Virbantel. The Iverhart Plus line is comprised of chewable tablets that protect dogs from heartworm disease and control hookworms and roundworms. Iverhart Max is approved to treat and control tapeworms.

Effipro is used to kill fleas, ticks, and lice on cats, and is based on fipronil. This topical solution is effective even after bathing and water immersion. Effitix Plus is a topical solution for dogs that contains the active ingredients fipronil, permethrin, and pyriproxyfen. It is used to control infestations of ticks, fleas, and lice. Moreover, Effitix Plus repels biting flies and kills mosquitoes. It is used on puppies and dogs that are 8 weeks old or older.

The Knockout line includes Knockout E.S. Area Treatment, Knockout Room and Area Fogger, and Knockout Area Treatment. Knockout E.S. contains pyriproxyfen, pyrethrin, permethrin, distillates, and hydrocarbons as active ingredients. Knockout Room and Area Fogger is an insecticide spray for residential use. This product can only be used when the residential area has been vacated by humans and pets. Knockout Area Treatment is a spray which is meant to be used in indoors only. The Knockout product line is used to treat and control fleas and ticks around homes.

Otomite Plus is used for the treatment of ear mites in cats, dogs, kittens, and puppies. Preventic Tick Collar for Dogs is used to kill and detach ticks. It starts working within 24 hours of application. Sentinel flavor tabs and Sentinel Spectrum provide protection against various parasites, such as heartworm, flea, hookworm, roundworm, and whipworm. Virbantel is composed of active ingredients such as pyrantel pamoate and praziquantel. It is used to treat and control roundworms, hookworms, and tapeworms.

MARKETING POLICIES

Virtually all of Virbac's pet insecticides are sold through distributors or brokers who call on retail stores. The company has an internal sales force of 30 reps and also works with a several dozen manufacturers' reps. Virbac insecticides are available in most leading retail pet stores such as PetSmart. The company increased its distribution network by growing the Virbac sales force and included a new major distributor in January 2010. This resulted in increased sales of many of its products, especially Iverhart.

ADVERTISING

Virbac has \$213,700 TME for its pet insecticides in 2016, all of which was for point-of-purchase interior displays.

FACILITIES

Virbac Corporation employs 528 people nationally and is headquartered in Fort Worth, TX. This location includes both warehouse and manufacturing facilities for its dermatological and other nonregulated products. Virbac's largest manufacturing facility is its Bridgeton, MO, plant which comprises 176,000 square feet. The company holds over 140 EPA and FDA product registrations, and manufactures these products at its Bridgeton facility.

OUTLOOK

Virbac S.A. has achieved strong recent growth, fueled by strategic acquisitions, in particular the purchase of Sentinel and Sentinel Spectrum, and gains in international markets. Virbac Corp. is growing at a steady rate with new product introductions and promotion. Continued expansion of the U.S. pet products market will support sales. Virbac Corp. is planning to ramp up its activity by launching new as a result of new strategic alliances formed.

Table 9-75: Virbac's Outlook for Pesticides, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	98.7	-
2021	114.4	3.0

VOLUNTARY PURCHASING GROUPS

OVERVIEW

Voluntary Purchasing Groups (VPG) has been a supplier of lawn and garden products for more than 50 years. The company is headquartered in Bonham, TX and is a cooperative of approximately 7,000 farm supply retailers, lawn and garden dealers, and wholesalers that manufacture and distribute agricultural and consumer fertilizers, pesticides, and related products.

The company was forced by environmental and toxic tort litigation to file for Chapter 11 bankruptcy protection in June 1996. Its Plan of Reorganization was approved in June 1998. This litigation included personal injury and liability lawsuits arising from charges on the company for dumping arsenic at its Commerce, TX fertilizer plant beginning in the early 1960s, until the plant's closure in 1972. Without admitting responsibility for the contamination, VPG agreed to settle the matter with the State of Texas for \$2.5 million, thereby ending a 40-year dispute. The company continues to work with the Fannin County Development Foundation, Inc. (FCDF), a related party, to manage and administer the environmental cleanup of three former fertilizer plants.

SALES AND PROFITS

A semiprivate company, VPG releases limited financial information. Product sales in 2016 are estimated at \$52.4 million, growing at a rate of 3.0% in the last two years. Sales of consumer pesticides and related products are estimated to constitute 96% of the total sales at \$50.3 million in 2016. Around 99% of the company's sales are made through distributors and brokers, with the remaining made direct to retail. VPG works with more than 80 distributors, in addition to approximately 600 manufacturers' representatives. All sales are made under VPG's own brands and include, in addition to consumer pesticides and fertilizers, the company offers a large line of soil amendments and pet products.

CONSUMER PESTICIDES AND FERTILIZERS

VPG markets a broad range of lawn and garden products, including combination and straight fertilizers, herbicides, insecticides, fungicides, and related items. The company offers around 300 individual SKUs to more than 8,000 retailers across the country. VPG manufactures products under the brands: Ferti-Lome, Hi-Yield, and Natural Guard.

Consumer products are sold under the Ferti-Lome, Hi-Yield, and Natural Guard labels. The Ferti-Lome brand has a range of fungicides, insecticides, repellents, weed killers, house plant foods, plant foods, aerosols, and sprayers. The Hi-Yield brand has fertilizers, fungicides, insecticides, range and pasture, and weed killers. Natural Guard is a brand of organic products positioned as a complete line of natural products with fungicides, insecticides, plant foods, soil amendments, and repellents.

In 2005, a civil penalty in the amount of \$150,000 was issued to Voluntary Purchasing Group for distributing unregistered fertilizer products in Oregon. This enforcement action was based upon investigations conducted by Pesticides Division staff in 2002, 2003, and 2004, and involved 60 separate shipments of eight unregistered fertilizer products into Oregon.

In 2006, VPG added Weed-Out Lawn Fertilizer Plus Crab Grass Preventer to the Ferti-Lome line and the Hi-Yield line of dry insecticides and fertilizers was repackaged. Hi-Yield Turf & Ornamental Weed & Grass Stopper was also introduced in a larger, 35 lb size.

In the years from 2007 to 2009, VPG introduced a large number of new products including Triple Action Plus pesticide, Broad Spectrum Landscape & Garden Fungicide with expanded label recommendations, Over-The-Top Weed & Grass Killer, Weed-Free Zone liquid and pump spray and F-Stop Lawn Fungicide. New Hi-Yield products include Dutch Bulb Food, 38 Plus Turf Termite & Ornamental Insect Spray, Indoor/Outdoor Broad Use Insecticide, Dipel Dust biological insecticide, Improved Slug & Snail Bait, Tomato & Vegetable Food, Rose Fertilizer, Bone & Blood Meal, Agricultural Limestone, Blood Meal, Muriate of Potash, Copperas (Iron Sulphate), Dusting Wettable Sulphur, Improved Lime Sulphur Spray, Compost Maker, Imported Fire Ant Control Cont Deltamethrin, Triple Superphosphate, Turf Ranger Insect Control Granules, Turf & Ornamental Weed & Grass Stopper With Dimension, Pecan & Fruit Tree Food, Horticultural Hydrated Lime, Brush, Vine & Poison Ivy Killer, and Vegetable Flower, Fruit & Ornamental Fungicide.

In its 2012 catalog, the company has again introduced a number of new products. Under the Ferti-Lome brand, VPG has launched 2-N-1 Systemic for garden protection against pests and diseases, Garden Cote fertilizer, Mole Go Granules repellent, and HydroStretch soil amendment. The company's most recent launches under Hi-Yield brand are Nutsedge Control, Ornamental Weed Preventer, Systemic Insect Spray, and Systemic Insect Spray RTS. Under the Natural Guard brand, VPG has recently launched Blood Meal, Bone Meal, Cottonseed Meal, Evergreen & Holly Food, Plant Food, Rose Food, Tomato & Vegetable Food, and Organic Spot Weeder.

In 2015, the company introduced Spinosad Bagworm, Tent Caterpillar and Chewing Insect Control. It can be applied with trigger sprayer or hose-end sprayers. The product is used to control pests such as moths, leafminers, and others.

Table 9-76: VPG's Sales of Pesticides and Related Products to Consumer Markets, 2016

Product category	\$ Thousand	% Of total
FERTILIZERS		
Lawn	28,318	54
Garden	4,720	9
Total	33,037	63
OUTDOOR INSECTICIDES	7,866	15
HERBICIDES		
Lawn	5,244	10
Nonselective	4,720	9
Total	9,964	19
ALL OTHER-a	1,573	3
TOTAL	52,440	100

a- Includes rabbit and deer repellants and miscellaneous products.

MARKETING POLICIES

All distributors and retailers of VPG's products are required to own a percentage of company stock, and the cooperative currently has about 7,000 stockholders. The company's profits are paid out to patron-stockholders at the end of the fiscal year as dividends, according to patrons' sales volume of VPG products.

Company sales representatives market products and provide services to more than 83 distributors in 47 states (excluding California, Alaska, and Hawaii). The products of VPG are sold through locally owned family merchants, including independent lawn and garden centers, nurseries, hardware stores, and farm and feed stores. The company had total retail availability at more than 8,000 outlets in 2016. VPG does not market to mass merchandisers and retail chains, largely because they may not accept the cooperative's terms for doing business. Retailers associated with VPG must meet the minimum stock requirements, and the terms for sales to all retailers and distributors are either cash or C.O.D. VPG also does not offer its products for sale online. Their future strategy remains on the lines of selling through independent retail outlets only.

ADVERTISING

VPG has very limited TME in 2016 of \$11,700, all to support the Ferti-Lome line. All of it is used for spot TV advertising for Ferti-Lome products.

VPG has offered a cooperative advertising program with its distributors, arranged on an individual basis with the regional sales representative for Ferti-Lome products only. The advertising budget depends on a certain percentage of the purchases made by their distributors. VPG continues to offer ad slicks for virtually all of its products that are available in four different versions (color without copy, color with copy, gray without copy, and gray with copy).

FACILITIES

VPG's headquarters and manufacturing facilities are located in Bonham, TX. The cooperative employed 100 people in 2016.

OUTLOOK

VPG is expected to face increasing competition from rising presence and marketing power of mass marketers, hardware chains, wholesale clubs, and home centers, which continues to reduce the number and importance of the independent hardware and lawn and garden retailers that comprise VPG's distribution network. Through 2016, VPG's sales of consumer pesticides and fertilizers are expected to expand by 3.0% to \$60.7 million.

Table 9-77. VPG's Outlook for Pesticides and Fertilizers, 2011 to 2016

Year	\$ Million	Average annual growth, %
2016	52.4	-
2021	60.7	3.0

WOODSTREAM (VESTAR CAPITAL PARTNERS)

OVERVIEW

Woodstream Corporation was founded in the year 1832 and is headquartered at Lititz, PA. The company manufactures and markets a wide range of consumer and professional pest control, pet care, and garden care products. In June 2015, Vestar Capital acquired Woodstream, and it is now a portfolio company of Vestar.

Vestar Capital is among the leading private-equity firms that specializes in management buyouts, and growth equity investments. It was founded in the year 1988 and headquartered in NY. It has been focusing on investing in several growing businesses. The consumer sector of Vestar comprises various portfolio companies that offer food products, apparel, household goods, and retail services.

Woodstream has engendered growth through strategic investments in other companies. Prior to its acquisition by Vestar, Woodstream acquired Senoret Group in April 2013. The Senoret acquisition, and its related entities and brands TERRO and Sweeney's, broadened Woodstream's ant, mole, and gopher product lines.

In April 2007, Woodstream acquired the Mosquito Magnet line of products from American Biophysics Corp; the \$6 million deal included the Defender, Liberty and Liberty Plus models. Also in 2007, Woodstream acquired Dr. T's Nature Products, a manufacturer of 16 unique, environmentally friendly pest repellents for both consumer and commercial markets.

SALES AND PROFITS

Woodstream's products are sold at more than 100,000 retail locations throughout the United States, Canada and other international markets including Ace, Agway, Home Depot, Kmart, Lowes, Menards, Rite Aid and True Value. Although Woodstream also offers professional products, these represent about 10% of total sales. All consumer products are sold under the company's own brand names.

Vestar Capital is a private equity firm and releases limited financial information. Woodstream's total sales in 2016 are estimated to be \$250 million, incorporating sales from Senoret, Mosquito Magnet, and growth promotion from the merger with Vestar Capital.

CONSUMER PESTICIDES AND FERTILIZERS

Woodstream is the world leader in least toxic pest control, manufacturing, and marketing two major product lines, Victor and Havahart, in addition to other acquired brands.

The Victor product line includes products composed of mint oil, fatty acid soaps, and pheromone attractants that aim at fly, moth, roach, and ant control. The product line includes products for mouse control, rat control, mole & gopher control, insect control, and for commercial purpose. The technologically advanced mouse traps use high-voltage shock to kill mice within a few seconds. The rat control products include snap traps, electronic traps, ultrasonics, and glue traps. The rat zapper uses high-voltage to kill large size rats. Mole & gopher control products include Victor Out O'Sight mole trap that is equipped with safety pin for safe operation. Other products for mole & gopher control consist of deadeest mole trap, mole defense kit, granular repellent, and Sweeney's poison moleworms, among others. The insect control products include Victor The Ultimate Flea Trap, Victor Fly Ribbon 4-Pack, and Victor Poison-free indoor Fly Trap, among others. These insect control products are used to control crawling insects such as fleas and stink bugs and flying insects such as flies and wasp & hornet.

The Havahart line includes animal traps and animal repellants. Animal traps are offered for cats, chipmunks, rabbits, raccoons and squirrels. Animal repellants are available for cats, deer, raccoon, skunk, squirrel and snakes. The animal traps line includes products such as Havahart Feral Cat Trap Rescue Kit, Havahart Large 1-Door Animal Trap, Havahart Small 1-Door East Set Trap, Havahart Small 2-Door Animal Trap, and Havahart Feral Cat Rescue Kit, among others. The animal repellants consist of Havahart Spray Away Motion Activated Sprinkler, Havahart Spray Away Hydro Remote Animal Repellent, Critter Ridder Animal Repellent Granular, and Havahart Deer Off II deer repellent, among others. and Dr. T's Snake-A-Way Snake Repellent Granular, among others. The Terro brand includes ant control sprays, spider control sprays, and flying insect control sprays. The Safer brand offers insect control sprays, aerosols, traps, powders, and fertilizers for lawn care.

Acquired in 2007, Mosquito Magnet is a leading biting insect trap in the consumer/residential market, and according to Woodstream, the only lon-term solutions that is scientifically proven to effectively reduce mosquitoes and other biting insects. The line represents the first propane-powered mosquito trap for consumer use and contains Lurex3, the only EPA-approved attractant specifically formulated to capture the invasive Asian tiger mosquito, a carrier of West Nile Virus. Mosquito Magnet's patented cartridges gradually release attractants using an advanced design to ensure that cartridge replacement and propane refilling are synchronized.

The new Dr. T's Nature Products line includes 16 distinct products that address snakes, rats and mice, mosquitoes, moles, bats, birds, squirrels, rabbits and cobwebs.

Woodstream has 60 organic products in their line. These products come under the Safer, Concern, Ringer and Havahart brands.

The 2010 launches by Woodstream include Victor Kill & Seal Mouse Trap and Safer Band EndALL.

Table 9-78: Woodstream's Sales of Pesticides and Related Products to Consumer Markets, 2016

Product category	\$ Million	% Of total
VICTOR SAFE		
Rodent control-a	50.0	20
Indoor insecticide	27.5	11
Fertilizers	20.0	8
Outdoor insecticides	22.5	9
Fungicides	10.0	4
Repellents	12.5	5
All other-a	15.0	6
Total	157.5	63
HAVAHART	67.5	27
MOSQUITO MAGNET	7.5	3
DR. T.'S	5.0	2
ALL OTHER-b	12.5	5
TOTAL-c	250.0	100.0
a- Includes traps, among other products.		
b- Includes international and professional sales as well as sales of fencing and bird feeders.		
c- Totals may not add due to rounding.		

MARKETING POLICIES

Woodstream's products are marketed through distributors to leading retailers in the United States, as well as online through the company's websites. By joining Woodstream's mailing list, purchasers can save 10% on all online purchases. The website displays account benefits which include reward points. In 2009, they launched a new website, mosquitomagnet.com, for customer awareness for mosquito-borne diseases and other related information. New product launches have been low for the last few years.

ADVERTISING

Although Vestar Capital has significant expenditures for consumer laundry products, Woodstream's product lines has no TME in 2016.

FACILITIES

Woodstream, now a portfolio company of Vestar Capital, itself operates warehousing and administration facilities in Lititz, PA, with satellite warehouse operations in Missouri and California.

OUTLOOK

Over the next five years, Woodstream will continue to grow on the basis of its well established brands that are poison-free, humane, and organic, popular features in the marketplace today. Woodstream's low toxicity Victor line will grow by an estimated 4% per year. Woodstream's low toxicity Victor line will grow by an estimated 4% per year on the strong consumer appeal of low toxicity lawn and garden products. The backing of Vestar Capital is expected to engender growth as well. In 2016, the company's U.S. consumer pesticide and fertilizer sales are projected to reach \$166.8 million.

Table 9-79: Woodstream's Outlook for Pesticides and Fertilizers, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	142.5	-
2016	166.8	3.2

ZEP (NEW MOUNTAIN CAPITAL)

OVERVIEW

New Mountain Capital was founded in the year 2000 and is based in New York. The company manages private equity, public equity and credit capital along with its affiliates. It manages public equity portfolios through New Mountain Vantage Advisers, which is an investment adviser. The company manages its credit funds through New Mountain Finance Corporation, an American company listed in New York Stock Exchange.

New Mountain capital focuses on extensive research and has over the time developed research and operational expertise in specialty chemicals, health care, logistics, consumer products, and environmental sciences, among others.

In June 2015, New Mountain acquired Zep Inc., a leading manufacturer and marketer of maintenance and cleaning solutions. New Mountain provides Zep with financial and strategic resources to support its acquisition strategies. Zep manufacturers pest control products under its Enforcer brand.

SALES AND PROFITS

New Mountain Capital is a private company and does not disclose its financial performance.

The Enforcer brand provides retail plumbing and pest and weed control products, which are sold through home improvement retailers.

The Enforcer brand provides retail plumbing and pest and weed control products, which are sold through home improvement retailers. Enforcer is a 100% retail brand. Sales of Enforcer pesticides are estimated at \$10.5 million in 2016.

CONSUMER PESTICIDES AND FERTILIZERS

The Enforcer products offered by Zep Inc include an extensive range of insecticides, herbicides, and rodenticides. Enforcer Products manufactures more than 400 chemical items, under the categories: insecticides, herbicides, plumbing, and lawn and garden.

The products are sold through the nation's leading hardware, home center, grocery, and mass retailers under the Enforcer brand. The plumbing and cleaning categories, which primarily involve products for unclogging drains are not germane to this report. The remaining categories marketed by Enforcer are insecticides, and herbicides. The Enforcer brand has a large array of products based on various actives that are sourced from third-party manufacturers.

Ants: The products include Ant & Roach Killer, BugMax Home Pest Control, BugMax Spider and Scorpion Killer, BugMax Fogger, BugMax Insect Killer, Concentrate, Roach Ridd, Over Nite Pest Control Concentrate, 20 Second Roach Killer, Home Pest Control, Mosquito & Flying Insect Killer, Flea Killer for Carpets, Flea Spray for yards Concentrate, Flea Spray for Homes, Bed Bug & Flea Fogger, Over Nite, Flea & Insect Trap, Wasp & Yellow Jacket Foam, and AntMax Bait Stations. These products are used to kill ants and fire ants. Some ants dwell in soil while the others are found in wood.

Roaches: The products offered under this category are used to kill a range of American cockroaches, German cockroaches, and waterbugs. The products included in this category are 20 Second Roach Killer, RoachMax Bait Stations, BugMax Fogger, BugMax Insect Killer Concentrate, Roach Ridd, Over Nite Pest Control Concentrate, Home Pest Control, Flea Fogger, Flea Killer for Carpets, Flea Spray for Homes, Bed Bug & Flea Fogger, Over Nite Flea & Insect Trap, BugMax Home Pest Control, and Ant & Roach Killer.

Spiders: The products under this category include BugMax Spider and Scorpion Killer, BugMax Home Pest Control, BugMax Insect Killer Concentrate, BugMax Fogger, Ant & Roach Killer, Over Nite Pest Control Concentrate, 20 Second Roach Killer, Home Pest Control, Mosquito & Flying Insect Killer, Wasp & Yellow Jacket Foam, Flying Insect Killer, Flea Spray for yards Concentrate, Flea Spray for Homes, and Over Nite Flea & Insect Trap.

Wood Boring: Wood Boring includes products for killing carpenter ants and carpenter bees. Th product line includes Ant & Roach killer, BugMax home Pest Control, BugMax Insect Killer Concentrate, Over Nite Pest Control Concentrate, Home Pest Control, Mosquito & Flying Insect Killer, Flea Fogger, Flea Spray for Yards Concentrate, Bed Bug & Flea Fogger, and Over Nite Flea & Insect Trap.

Flea & Tick: This category includes products that are effective against brown dog ticks, fleas, flea eggs & larva, lice, and ticks. The products include Flea Killer for Carpets, Flea Spray for Yards Concentrate, Flea Spray for Carpets & Furniture, Flea Spray for Homes, Flea Fogger, BugMax Home Pest Control, BugMax Insect Killer Concentrate, Over Nite Pest Control Concentrate, 20 Second Roach Killer, Mosquito & Flying Insect Killer, Over Nite Flea & Insect Trap, Flea & Tick Spray for Dogs and Cats, Flea & Tick Shampoo for Pets, Bed Bug & Flea Fogger, BugMax Fogger, and Bed Bug Spray.

Rodents: The product line includes MouseMax Glue Traps, and RatMax Glue Traps. Rodents are one of the major reasons for crop loss every year. Thus, these products are helpful in getting rid of rodents.

Flying Stinging: The products line includes Wasp & Yellow Jacket Foam, Instant Knockdown Wasp & Hornet Killer, Flying Insect Killer, BugMax Home Pest Control, Over Nite Pest Control Concentrate, Flea Fogger, and Bed Bug & Flea Fogger.

Other Crawling Insects: This category includes products for millipedes, scorpions, termites, beetles, crickets, earwigs, grasshoppers, and other crawling insects. The product line includes BugMax Fogger, Over Nite Pest Control Concentrate, Mosquito & Flying Insect Killer, Flea fogger, Flea Spray for Yards Concentrate, Bed Bug & Flea Fogger, Over Nite Flea & Insect Trap, BugMax Home Pest Control, BugMax Insect Killer Concentrate, 20 Second Roach Killer, Flea fogger, BugMax Spider and Scorpion Killer, Ant & Roach Killer, Wasp & Yellow Jacket Foam, Roach Ridd, and Flea Killer for Carpets, among others.

Other Flying Insects: This category includes products such as BugMax Home Pest Control, Ant & Roach Killer, Flying Insect Killer, BugMax Fogger, Wasp & Yellow Jacket Foam, and Over Nite Flea & Insect Trap, among others.

Table 9-80: Enforcer's Estimated U.S. Sales of Pesticides and Related Products to Consumer Markets by Product Category, 2016

Product category	\$ Thousand	% Of total
INSECTICIDES		
Outdoor	4,725	45
Indoor	4,725	45
Pet insecticides	525	5
Total	9,975	95
HERBICIDES	525	5
TOTAL	10,500	100

MARKETING POLICIES

The company sells its products directly to the customers. In 2015, New Mountain acquired Zep Inc. and markets its wide range of cleaning, commercial, and consumer products. Zep had formed partnerships with distributors, and retailers to ensure that its products are available to the customers on time.

ADVERTISING

The Enforcer brand had no traceable media expenses for 2016. The company uses You Tube as a medium to advertise its products.

FACILITIES

New Mountain aims at acquiring companies every year and invests nearly \$100 million to \$500 million per transaction. It is headquartered in New York, NY. The company, along with its portfolio companies, employs nearly 60,517 employees. In 2015, 36,697 individuals were employed by the company, including 25,412 in the United States. Zep Inc. is based in Atlanta, GA.

New Mountain invests extensively in research and development activities. Its portfolio of companies had invested nearly \$3.2 billion in research and development, software development, and capital expenditures.

Enforcer Products are manufactured in Atlanta and Emerson, GA. Enforcer is a key employer in the North Georgia region. Products are shipped throughout the United States, Canada, and to many additional destinations throughout the world.

OUTLOOK

The firm is now positioned to be a more dynamic market-driven enterprise that delivers superior products and customer service while improving financial results. Sales of Enforcer's pesticides are expected to grow to about \$12.2 million by 2021.

Table 9-81: Zep's Outlook for Pesticides, 2016 to 2021

Year	\$ Million	Average annual growth, %
2011	10.5	-
2016	12.2	3.0

ZOETIS

OVERVIEW

Zoetis Inc., of Parsippany, NJ, develops and manufactures a portfolio of animal health vaccines and medicines, diagnostic products, genetic tests, and various other services that are required to meet the demand of the animal owners. The company offers products under four categories, namely, Companion Animals, Farm Animals, Diagnostics, and Genetics.

Under its Companion Animals category, Zoetis offers vaccines, parasiticides, anti-infective, medicinal feed additives, and other pharmaceuticals for dogs, cats, and horses. These products not only improve the quality of cats, dogs, and horses but also extend their life. The Farm Animals category offers products that prevent beef, pigs, poultry, sheep, and fish from conditions that may adversely affect livestock. Zoetis offers diagnostic kits under its Animal Diagnostics category. WITNESS, ProFLOK, SERELISA, Our-Chek, and AlphaTRAK are the major diagnostic kits deliver fast and reliable results.

In 1997, Pfizer Animal Health, now a part of Zoetis, launched Rimadyl, the first nonsteroidal anti-inflammatory drug for dogs for the treatment of osteoarthritis, which had first-year sales of \$46 million. In 1998, Pfizer launched Anipryl, the first approved treatment for canine Cushing's disease. In July 1999, Pfizer introduced Revolution, a topical parasiticide for dogs and cats based on the active ingredient selamectin. Revolution, applied as a spot-on treatment, provides flea control, heartworm prevention, ear mite treatment for dogs and cats, sarcoptic mange and tick control in dogs, and nematode treatment in cats. Mita-Clear, a lotion for treatment of ear mites in cats, and Cestex tablets for control of tapeworm in cats came into the product line in 1995 with the merger of Pfizer and SmithKline Beecham.

In 2009, Pfizer, now a part of Zoetis, acquired Wyeth including its subsidiary Fort Dodge Animal Health. The acquisition has helped Pfizer Animal Health to greatly diversify its U.S. portfolio, as well as broaden its offering in all animal health segments. Pfizer also had to divest certain animal health assets in connection with the regulatory approval process associated with the acquisition of Wyeth. The products divested were primarily from Wyeth's Fort Dodge Animal Health portfolio in the United States and Canada to Boehringer Ingelheim (BI). These products mainly included cattle and small animal vaccines, and some animal health pharmaceuticals.

In June 2013, Pfizer spun off Zoetis to current stockholders, divesting itself of its animal health business. The business employees about 9,000 people and had revenues of 4.2 billion in 2011.

In February 2015, Zoetis purchased animal health business of Abbott for \$255 million. The purchase expanded Zoetis' companion animal product portfolio. Abbott Animal Health has a presence in nearly 20 countries and holds a market-leading position with products in anesthesia, fluid therapy, pain, oncology and diabetes monitoring - veterinary surgical suite

In August 2015, Zoetis completed three-story expansion of its manufacturing facility. The increased production at the facility is a move by the company to affirm its position as a global leader in the manufacturing of animal health products.

In November 2015, Zoetis acquired PHARMAQ, a leader in vaccines and innovation for healthcare products in aquaculture. With this acquisition, the company aimed at achieving a platform for growth in the animal health market.

In February 2016, Zoetis also received approval from FDA for Simparica Chewable, a flea and tick medicine for dogs. Simparica Chewable is used to kill adult fleas and prevents flea infestations. It is approved to be used on dogs that are six months of age or older. Simparica is a single-dose tablet to be taken once a month.

In February 2017, Zoetis received license from the European Commission for Stronghold Plus, a combination of parasiticides that treats fleas, ticks, ear mites, and lice. It is also used to prevent heartworm disease in cats.

Table 9-82: Zoetis's Sales by Product Concentration, 2016

Product Lines	\$ Million	% Of total
Top Ten Product Lines	2,932.8	60.0
Top Four Products	1,955.2	40.0
Total	4,888.0	100.0

Table 9-83: Zoetis's Sales by Product Category, 2016

Product Category	\$ Million	% Of total
Anti-Infectives	1,270.9	26.0
Vaccines	1,270.9	26.0
Parasiticides	684.3	14.0
Medicated Feed Additives	488.8	10.0
Other Pharmaceuticals	977.6	20.0
Other Non-Pharmaceuticals	195.5	4.0
Total	4,888.0	100.0

SALES AND PROFITS

Zoetis reported worldwide corporate sales of \$4.8 billion in 2016. The 2016 sales witnessed an upsurge from 2015 due to introduction of new products. The net income of Zoetis grows by 17.0% in 2016. The net income stands at \$821 million in 2016 as compared to \$339 in 2015. Zoetis also incurred R&D expense of around \$376 million in 2016.

CONSUMER PESTICIDES AND FERTILIZERS

Zoetis's sales of consumer pet insecticides include Revolution, a topical transdermal parasiticide that is both an ectocide and endectocide. Introduced in July 1999, Revolution is a broad-spectrum parasiticide for both dogs and cats. Revolution provides flea control, heartworm prevention, and ear mite treatment for dogs and cats. It also provides sarcoptic mange and tick control in dogs and intestinal worm control in cats. Rimadyl is for the treatment of pain and inflammation associated with canine osteoarthritis and soft-tissue orthopedic surgery. All these products are available only through veterinarians. Simparica Chewables, introduced in 2016, is a tablet for dogs that controls fleas and ticks and remains effective for a month. It prevents flea infestations and kills fleas before they can lay eggs.

Zoetis's sales of pet insecticides in 2016 are estimated at \$98.5 million, of which Revolution accounts for about \$71.0 million and the newly introduced Simparica \$27.5 million.

MARKETING POLICIES

Zoetis enters contracts with distributors, in markets where it does not have a direct commercial presence, to provide logistics, sales and marketing support. The sales representatives visit the customers to provide information and promote the company's products and services.

ADVERTISING

The company believes in high advertising and promotional spending in order to market its newly introduced products. TME for 2016 totaled \$640,300 of which \$232,600 was for Revolution and \$407,700 for the newly introduced, Simparica.

FACILITIES

Zoetis' headquarter is located in Parsippany, NJ. The company has a global manufacturing network of 25 sites. The company has 2,800 employees as of 2016.

OUTLOOK

Zoetis's sales of Revolution are expected to continue to grow in the next five years due to the unique capability of the product. Revolution is a transdermal topical with a wide spectrum of control including fleas, ticks, heartworm, and mites. It is effective on the exterior of the animal and also is absorbed through the skin into the bloodstream to give additional protection. The sales of Simparica Chewables is expected to grow as it offers quick and insistent protection against fleas and ticks.

Competition has grown in the animal health market, however, from other spot-on products for control of fleas and ticks, available either through veterinarians or in OTC retail outlets. Growth is forecast to continue for Revolution because of its unique broad-spectrum advantage. Moreover, growth is expected for Simparica Chewables as well as it is well-positioned in the market to gain significant share in the companion animal anti-parasitic market. It is expected to show domestic growth of 7.0% per year over the next five years.

Table 9-84: Zoetis's Outlook for Pesticides, 2016 to 2021

Year	\$ Million	Average annual growth, %
2016	98.5	-
2021	138.2	7.0